THE BUILDER

INCORPORATING

"ARCHITECTURE" and "THE BRITISH ARCHITECT"

VOL. CLXXVIII APRIL 14, 1950 No. 5591

LIBRARY ARCHITECTURE UNIVERSITY OF ILLINOIS

THIS WEEK'S NEWS

PAGE

THE MINISTER OF WORKS has announced the transference of responsibility for Government-sponsored building research from his Department to the Department of Scientific and Industrial Research. Economies in staff and expenditure are given as the chief advantages resulting from the change. 479

THE DESIGN submitted by Messrs. H. Cullerne Pratt and R. P. Gray, AA.R.I.B.A., has been placed first in the Whitehaven Public Hall competition. The award and designs placed first and second are given. 484

THAT LOCAL AUTHORITIES should be allowed to negotiate their contracts more freely instead of putting them out to tender was a suggestion made by the Hon. Lionel Brett, A.R.I.B.A., when he spoke on housing costs at the Housing Centre. 493

THE MINISTRY OF HEALTH'S REPORT for 1949 contains a section on hospital function, planning and construction which emphasises the importance of adequate air and light. 495

A HOUSING EXPERIMENT to provide flats for dwellers in a rural district at Toulouse is illustrated and described. 496

ORGANISATION, PRODUCTIVITY AND DESIGN are listed by Messrs. H. F. Broughton and N. S. Pippard, of the Chief Scientific Adviser's Division, as the really important causes of cost variation in house construction. 497

THE MECKLENBURGH-SQUARE CONTROVERSY

IT is a pity that the enthusiastic send-off of the National Thanksgiving Fund at Guildhall in recognition of food parcels and other help given to us so generously during the war by the Commonwealth and United States peoples should have been followed by a sharp controversy over the architectural character of the proposed commemorative buildings, and their suggested site in Mecklenburgh-square. Nevertheless, it is far better that criticism should be made now than that it should come too late for consideration. To get the matter into proper perspective, a brief glance at the history and present state of the site is helpful.

Brunswick- and Mecklenburgh-squares were laid out towards the end of the eighteenth century, to the west and east sides respectively of the Foundling Hospital, to the plans of S. P. Cockerell, the hospital architect. Only the three outer sides of each square were built on, the inner sides remaining open, as they still do, to the grounds of the hospital, now a public open space known as Coram's Field. Cockerell was succeeded in 1807-8 by his pupil Joseph Kay, who laid out the gardens of Mecklenburgh-square and designed the dignified terrace of brick and stucco houses on the east side, all that remains reasonably intact to-day of the original buildings. The houses on the south side have been completely demolished and their site is now being utilised for an extension of London House, the hall of residence for students, designed by the late Sir Herbert Baker. The houses on the north side of the square have been badly damaged by bombing, and it is proposed to demolish these entirely and to erect on their site the proposed "Thanksgiving" hall of residence for Commonwealth and U.S. students.

The arguments for and against the use of this site have been well stated in two recent letters to *The Times*, by Sir Frank Newson-Smith, a Governor of London House, and Lord Rosse, chairman of the Georgian Group, respectively. Taking the opposition first, we give the following quotation from the letter of Lord Rosse, which summarises the chief objections from the amenities point of view. "London House," writes his lordship, "has been allowed to rear its ponderous bulk on the south side of the square before plans for the rest of the square were yet made: less than two years ago the Group successfully opposed a proposal of the L.C.C. to construct a secondary school on the north side. Now plans for the rebuilding of the north and east sides have been produced which, if carried into effect, will complete the ruin of the design of the square. The east side is to be rebuilt, where this is necessary on account of war damage, in general conformity with Joseph Kay's original design. But this four-storey block is to be dominated by London House on the south and the new hostel on the north, which are each of six storeys. Nor will there be any balance, except in the matter of height, between the blocks to north and south, for that on the north, in a manner quite unbefitting a building in a square, has a deeply recessed centre section with projecting wings. The Georgian buildings of Mecklenburgh-square have a quiet dignity and scholarly character which, I venture to think, is more suited to a university quarter than the graceless multi-storeyed blocks designed to take their place. They readily lend themselves by horizontal conversion or otherwise to present-day needs."

Sir Frank Newson-Smith, although writing presumably before he had seen Lord Rosse's letter, dealt with some of these points. "As regards the suggestion that a beautiful old square is being wantonly destroyed," he wrote, "it should be made clear in the first place that the Georgian houses on the east side of the square are in fact to be restored and preserved under the scheme. The north side of the square, which is to give way to the new memorial building for women and married students from overseas, is badly damaged by enemy action. There are gaps where five out of thirteen houses have been destroyed by bombing, and the owners of the site have been advised that, short of rebuilding, the life of the remaining houses cannot be guaranteed for more than ten years. The south side of the square, which has already been demolished, was so extensively damaged that it could have been made habitable only for a similar period. Much consideration has been given to the architectural aspects of the whole plan with a view to the creation of a collegiate centre of fine proportions and design."

It will be seen from the foregoing quotations that the chief differences of opinion arise over (*a*) the proposal to pull down, rather than rebuild and restore, the old houses on the north side of the square, (*b*) the layout of the proposed buildings with a forecourt to the square, and what is regarded as their excessive bulk and height, and (*c*) the architectural character of the elevations. If we accept the evidence that the old houses on the north side are beyond permanent redemption, then there are only three main questions to be considered: (1) Are new buildings of six storeys unreasonably high in relation to old ones of four? (2) Is there any real objection to the proposal to lay out

the new buildings with a forecourt to Mecklenburgh-square? and (3) Are the elevations " graceless "?

The answers to all three questions are, in our view, in the negative, for the following reasons: (1) Historical precedent for disparity in the heights of grouped buildings is not lacking; for example, Chambers made the Strand block of Somerset House higher than the rest of the work; (2) A forecourt might possibly give added dignity to the square, but if, on further study, it should be considered visually undesirable, why not build to the existing line of the square and, if the depth of the site is sufficient to allow it, form an internal court on the lines of an Oxford quad? (3) The elevations of the proposed buildings as shown in the perspective drawing (published in *The Builder*, March 31) may not be exciting, but they at least have a simple dignity in keeping with their purpose and position. A traditional design of this kind should not be expected to win the plaudits of adventurous students, but it must not be forgotten that we are here concerned with an addition to a great University where experimentalism is inappropriate.

In our view the proposed buildings would not be over-dominant, if it is fair to judge them from the existing London House; but to settle the question, why not have a model prepared of Mecklenburgh-square and its immediate surroundings with the proposed new buildings in position? This should be publicly exhibited in London; it might even go on tour round the country so that contributors to the fund may see how their money is to be used. In any case, let us have the model as soon as possible. It should quickly settle this unfortunate controversy.

THE REDEVELOPMENT OF WARWICK

THE study of Warwick* by Sir Patrick Abercrombie and Mr. Richard Nickson has been in progress for the last two or three years and their work has now taken shape in a report which has recently been published. The authors open with a brief review of the history of the Borough, explaining that this is desirable as indicating the reasons that have led to changes in the urban and rural functions of the town. The description falls into three stages: the first that of Warwick's foundation; the second from the eleventh to the close of the eighteenth century; and the last the nineteenth century and up to recent times.

It is probable that there was a settlement on this site before the Roman invasion, but it does not seem to have been regarded as of importance until Saxon times. After King Alfred's death, while conflicts with the Danes were continuing, his son and daughter founded a series of " burghs " in recaptured territory. One of these occupied a mound on the N.W. bank of the Avon, the start of the Castle and original enclosed town. In the Domesday survey of 1087, Warwick was recorded as a burgh possessing two hundred and twenty-five houses; this, with its Norman Castle guarding the ford across the river. During the troubled centuries that followed, the castle was destroyed and rebuilt (about 1350) and the town walls, with three gates, constructed. From then on, to the sixteenth century, Warwick increased in importance, and numerous dignified houses were built. During the Civil War the town, with its Castle, took on a fresh importance as a strategic position though the value of the Castle as a fortress had diminished.

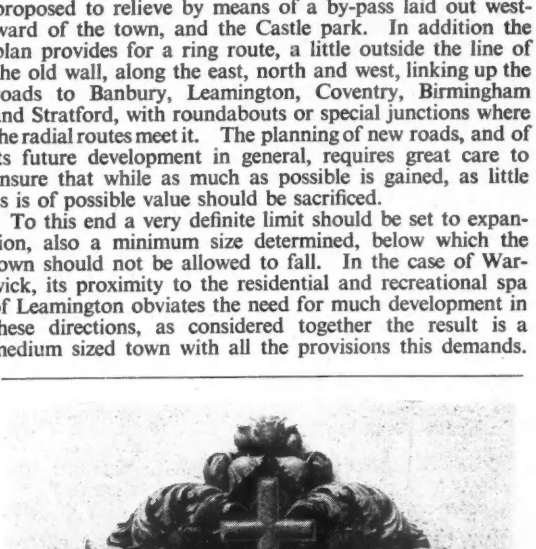
The next happening of importance was the " Great Fire " here in 1694, which destroyed or seriously damaged two hundred and fifty houses, together with the tower and nave of St. Mary's Church. Rebuilding activities embodied improvements to the main streets, and a lofty church tower of an unusual but not uninteresting type. Fortunately many of the fine timber houses escaped, and the new buildings were mostly handled with a dignified simplicity. Late in the eighteenth century the remodelling of the Castle park was undertaken. The Castle was now a mansion of the first rank, and it was irksome for the Earls of Warwick to find at the very foot of their home the approach to the town by way of the great fourteenth-century bridge.

To remedy this situation and surround the Castle with a private enclosure a masterly scheme of landscaping was put in hand by George Greville, the Earl. The nearer houses were pulled down and lawns and trees substituted for them, the mediæval bridge was replaced by a new bridge and approaches some hundred yards to the east; thus the centre of activity in the town tended to shift eastward and leave the part near the Castle quieter and less busy. In the meantime the town had been extending along the roads outside the line of the walls. As with other country towns these roads had developed to connect it to various neighbouring centres: Leamington, across the river to the east, Kenilworth and Coventry to the north, Birmingham to the north-west, with Stratford and Banbury southward.

This introduces one of the main problems dealt with in this report on Warwick. Much of the present traffic in the streets is not due to its own demands but to its serving the through routes between its principal neighbouring places, particularly between Coventry and the south-west, which it is proposed to relieve by means of a by-pass laid out westward of the town, and the Castle park. In addition the plan provides for a ring route, a little outside the line of the old wall, along the east, north and west, linking up the roads to Banbury, Leamington, Coventry, Birmingham and Stratford, with roundabouts or special junctions where the radial routes meet it. The planning of new roads, and of its future development in general, requires great care to ensure that while as much as possible is gained, as little as is of possible value should be sacrificed.

To this end a very definite limit should be set to expansion, also a minimum size determined, below which the town should not be allowed to fall. In the case of Warwick, its proximity to the residential and recreational spa of Leamington obviates the need for much development in these directions, as considered together the result is a medium sized town with all the provisions this demands.

* Warwick: Its Preservation and Redevelopment. By Patrick Abercrombie and Richard Nickson. The Architectural Press. Qto., 12s. 6d.



THIS TABLET has been erected as a memorial to those members of Purley Congregational Church who fell in the war of 1939-45. The poppy was adopted by the sculptor, Mr. A. T. Bradford, as a motif for enrichment of the tablet, which is a good example of the wood carver's art.

NOTES AND NEWS

Government-sponsored Building Research

THE Minister of Works, Mr. Stokes, announced in the House of Commons on April 3 the transference of the responsibility for all Government-sponsored building research from his Department to the Department of Scientific and Industrial Research. The change is made with effect from April 1, and in making the announcement the Minister, who was replying to a question by Mr. Diamond, said experience had shown that there would be advantages, including economies in staff and expenditure, if one organisation was responsible for Government-sponsored building research. The only exception to the arrangement is building research lying in the field of the Medical Research Council.

The Ministry will continue to suggest priorities and further subjects for research in the light of the research needs of the industry and will encourage the adoption of research results by the industry.

It was less than a fortnight or so before the Minister's announcement in the House of Commons that this newspaper called attention in a leading article to the need for an inquiry into the official building research programme in the light of urgent economic and sociological needs, and it is, we feel, a matter of some importance that responsibility for building research now rests with one single department.

In our issue following that suggesting a review of the research programme we commented upon the comparative backwardness of the building industry itself in making provision for research. Now that the work has been taken over completely by the D.S.I.R., there seems to be a strong case for the industry to set up its own research organisation and thereby benefit from D.S.I.R. grant-aid. There is reason to believe that the D.S.I.R. would welcome and encourage the formation of a building industry research association.

Doing It Yourself.

PUSHED WELL OFF the front pages of the newspapers in deference to more urgent Parliamentary news was a question raised in the House recently on the possibility of members of the public erecting their own houses without the assistance of a contractor, except on foundation work. Such an idea is, of course, not particularly new, and, as is frequently the case, one turns to the Scandinavian countries for the precedent. For many years now the Swedish government has sponsored the building of houses by the purchaser. Plans are supplied, the foundations are usually laid by a firm of contractors, and the erection of the house is carried out by the prospective tenants. Such a system obviously calls for great simplicity in constructional design (in Sweden prefabricated units are used) and, provided the type of house is not large, it is surely not too fantastic to suggest that many people could construct their own homes. Standardisation of house types would become imperative, but this should not be very difficult, and with the full co-operation of local authorities long waiting lists for homes would begin at last to shrink.

If proof be needed of the feasibility of the idea, one has only to see the charming small houses built by the Swedish people for themselves. Although prefabricated in type, they are capable of lasting a great many years and so far as appearance and efficiency are concerned they seem outstandingly successful.

Choice of Colour.

OBJECTIONS have been raised by some persons with certain political leanings because front doors on council house estates at Swindon, Wilts, have been painted bright blue, states a daily Press report. The architect has advised objectors to move into houses with red doors.

The Whitehaven Competition.

THOSE who, in more pessimistic moments, have tended to view the future of architecture with some misgiving, cannot have failed to be impressed by the competition successes achieved since the war by architects of the younger school. The result of the Whitehaven Competition (see page 484) has proved no exception to the general trend, and Mr. H. Cullerne Pratt, A.R.I.B.A., A.M.T.P.I., and Mr. R. P. Gray, M.B.E., A.R.I.B.A., A.M.T.P.I., are to be congratulated on being placed first.

Both are aged 34 and practise in partnership at Stratford, E.15. Mr. Pratt, who was trained at the Regent-street Polytechnic, started his architectural career with Sir John Burnet, Tait and Lorne in 1932 and thereafter worked in the offices of several well-known London architects, including Frederick Etchells, George Coles, Messrs. Howes and Jackman, and J. M. Sheppard and Partners. After war service with the R.N.V.R. he started in private practice in 1946.

Mr. Gray was trained at the Northern Polytechnic School of Architecture and was Soane and Victory Scholarship finalist in consecutive years. Before the war he was in the office of Mr. Oswald P. Milne, F.R.I.B.A., and after four and a half years with the Royal Engineers on bomb disposal work (for which he was awarded the M.B.E.), he served as Planning Officer to the West Suffolk County Council, under the County Planning Officer for East and West Suffolk. He entered private practice in 1948.

Architecture in the Dominions.

ON MARCH 30, the occasion of the 50th anniversary of the municipality, the Duke of Gloucester presented the Royal Charter to Nairobi, raising it to the status of a city. In the course of a lifetime, Nairobi has grown from a small river and swamp where in 1896 native tribesmen watered their cattle to the commercial centre of three colonial territories, and the hub of rail, road and air communications. The Nairobi competition may not appeal to all competition-minded architects in this country, the distance of the site probably appearing too much of a handicap to many, but at least it will focus some interest upon a rapidly expanding colony which can boast of some impressive architecture. Many of the Dominions possess an extraordinary energy in large-scale building as exemplified by Johannesburg which grew to its present size between the wars, yet knowledge of the city and its buildings is definitely hard to come by. Colonial architects have proved themselves in the past 50 years, yet the character of Durban, Melbourne and Toronto remains virtually undefined through a lack of architectural interest. The Nairobi competition will doubtless go a long way towards remedying this state of affairs, at least so far as Nairobi is concerned.

Proposed Racecourse, Ashanti.

MR. T. S. DARBYSHIRE, F.R.I.B.A., of Messrs. Yates, Cook and Darbyshire, has recently returned by air from Kumasi, Ashanti, Gold Coast, West Africa, where it is proposed to construct a new racecourse, complete with grandstands, tote buildings and all modern amenities. The architects were invited to advise on the project, and Mr. Darbyshire visited Kumasi to inspect the site, confer with the officials concerned, and has now received instructions to proceed with the necessary drawings. A plan of the actual racing track was prepared by Mr. Darbyshire during his visit, and pegging out of the course, and clearing of scrub was commenced before his return to England. It is hoped that the scheme will be completed and ready for racing before the end of 1951.

THE WHITEHAVEN PUBLIC HALLS COMPETITION. Seen above are Mr. R. P. Gray (left) and Mr. H. Cullerne Pratt, who have been awarded the first premium in this competition. The award and designs placed first and second are given on pages 484-6.

T.P.I. Country Meeting.

THE 24th ANNUAL COUNTRY MEETING of the Town Planning Institute will be held in Dublin from May 19 to 21 inclusive, under the chairmanship of the president, Sir George Pepler, C.B., F.R.I.C.S., Hon. A.R.I.B.A. On the opening day the Minister for Local Government, Mr. Michael Keyes, T.D., will hold a reception and luncheon for the members at a leading Dublin hotel. Later the same day, Mr. Michael O'Brien, Town Planning Officer, Dublin, will read a paper entitled "The Planning of Dublin," at St. Mary's Domestic Economy College, Cathal Brugha-street, Dublin. The Institute dinner will be held at the Royal Hibernian Hotel, Dublin, and the meeting will conclude with a whole day tour by motor coach. A visit to Belfast is also proposed during the meeting.

Scholarships and Exhibitions.

THE GOVERNING BODY of the Manchester Municipal College of Technology offer six scholarships and six exhibitions varying in value up to a maximum of £65 plus approved fees if resident at home, and £140 plus approved fees if resident in hostel or lodgings, according to the financial family circumstances of the student, to part-time students and others, tenable in any one of the full-time day courses of the college for three academic years, on condition that persons holding these scholarships prepare themselves for the degree of Bachelor of Technical Science (B.Sc.Tech.). Inquiries regarding qualification for admission to a degree

course should be addressed to the secretary of the Joint Matriculation Board, 315, Oxford-road, Manchester, 13.

Forms of application may be obtained from the Registrar of the College of Technology, Manchester, 1, returnable by June 20.

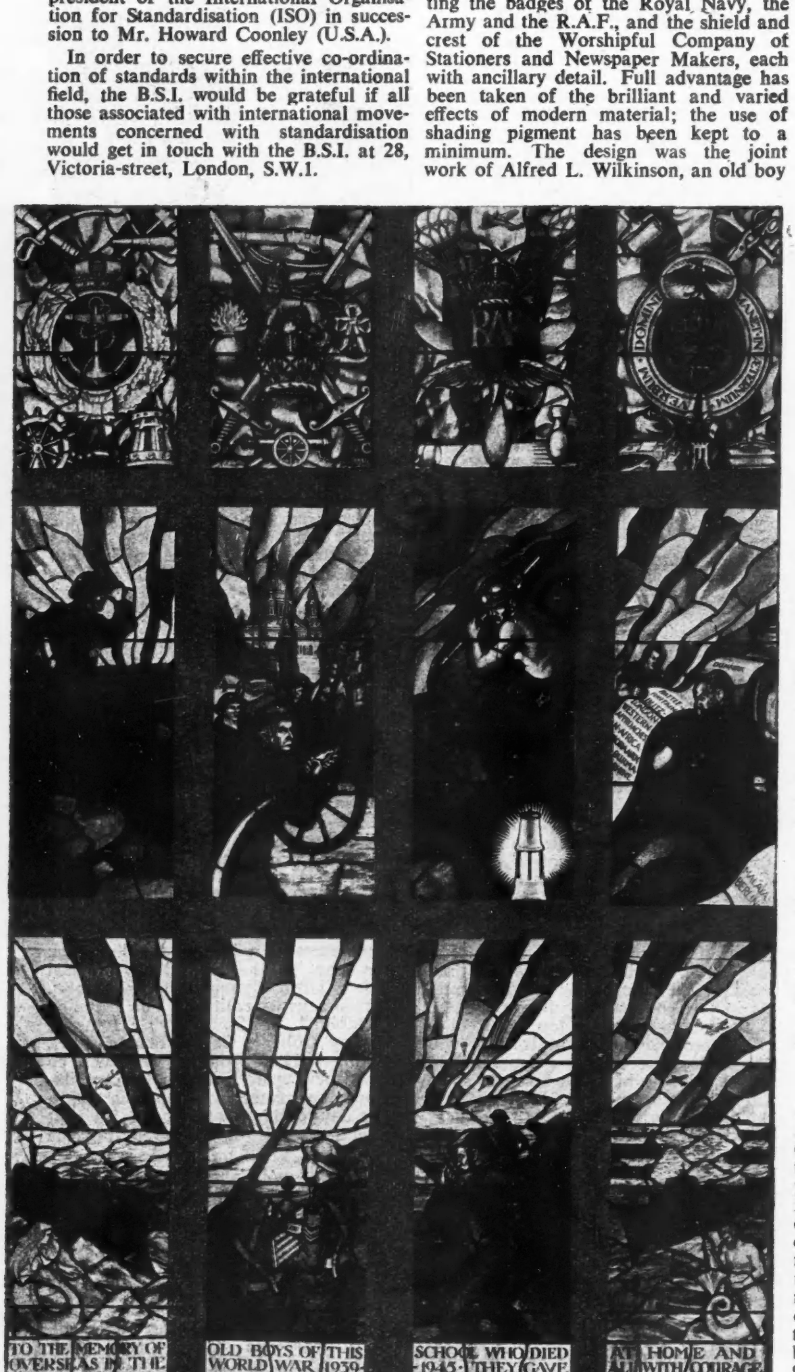
A New Appointment.

M. CAQUOT (FRANCE) has been elected president of the International Organisation for Standardisation (ISO) in succession to Mr. Howard Coonley (U.S.A.).

In order to secure effective co-ordination of standards within the international field, the B.S.I. would be grateful if all those associated with international movements concerned with standardisation would get in touch with the B.S.I. at 28, Victoria-street, London, S.W.1.

A Memorial Window.

THE WINDOW shown on this page is the War Memorial to the Old Boys of the Stationers' School who fell in the war of 1939-45. It is placed in the main hall of the school and was dedicated on February 19 last by the Bishop of London. Typical scenes of the war are depicted in the main panels, which are surmounted by four emblematical panels incorporating the badges of the Royal Navy, the Army and the R.A.F., and the shield and crest of the Worshipful Company of Stationers and Newspaper Makers, each with ancillary detail. Full advantage has been taken of the brilliant and varied effects of modern material; the use of shading pigment has been kept to a minimum. The design was the joint work of Alfred L. Wilkinson, an old boy of the school, and S. E. Gorski, the architect acting for the Old Boys' Association being another Old Stationer, Mr. Harold J. Coates, A.R.I.B.A.



STATIONERS' OLD BOYS' WAR MEMORIAL WINDOW. (*See note.*)

Designed by Alfred L. Wilkinson and S. E. Gorski.

Professional Announcements.

MR. L. A. CULLIFORD, F.R.I.B.A., F.R.I.C.S., A.M.T.P.I., and MR. L. A. CHACKETT, F.R.I.B.A., F.R.I.C.S., practising as L. A. Cullifordand Partners, at 47, Essex-street, Strand, W.C.2, have taken into partnership, with effect from April 5, 1950, MR. R. W. J. POLKINGHORNE, A.R.I.B.A., A.R.I.C.S. The style of the firm remains unchanged.

We are informed that the new London office of MACCONVILLE, FRASER AND SYMONDS, quantity surveyors, is at Parliament Mansions, Abbey Orchard-street, Victoria-street, Westminster, S.W.1. Tel.: Abbey 6480.

MESSRS. GEORGE E. HOLMES AND PARTNERS, corporate quantity surveyors, 47, Market street, Watford, announce that they have taken into partnership Mr. C. A. Hall, A.I.A.S. The style and title of the practice will remain unchanged.

MR. R. F. GALBRAITH, B.Sc., M.I.Struct.E., A.M.I.C.E., recently resigned for health reasons his active managerial duties with Messrs. Galbraith Brothers, Ltd., of High Holborn, and has now commenced to practise as a chartered civil and structural engineer, at 100, Queensway, Bayswater, W.2.

COMING EVENTS

Saturday, April 15.

SCIENTIFIC FILM ASSOCIATION.—One-day conference on "Photography and Cinematography by Invisible Radiation." London University Institute of Education, Malet-street, W.C.1. 10 a.m. until 9.30 p.m.

Monday, April 17.

SOCIETY OF MURAL PAINTERS.—Opening of an exhibition of mural painting. New Burlington Galleries, Old Burlington-street. 3 p.m.

Tuesday, April 18.

ARCHITECTURAL SCIENCE BOARD.—"Building in the Tropics," by Mr. G. A. Atkinson, A.R.I.B.A., R.I.B.A., 66, Portland-place, W.1. 6 p.m.

MANCHESTER BUILDING TRADES EXHIBITION.—City Hall, Deansgate. Daily, 10.30 a.m. to 7.30 p.m., until April 29.

Wednesday, April 19.

ROYAL SOCIETY OF ARTS.—"Little-known Furniture Designers of the Eighteenth Century," by Mr. R. W. Symonds, L.R.I.B.A. John Adam-street, Adelphi, W.C.2. 8.30 p.m.

Thursday, April 20.

SOCIETY OF CHEMICAL INDUSTRY (ROAD AND BUILDING MATERIALS GROUP).—"Soil Mechanics from Building and Engineering Aspects," by Mr. L. F. Cooling of the Building Research Station, D.S.I.R., 11, Upper Belgrave-street, S.W.1. 6 p.m.

Friday, April 21.

BIRMINGHAM AND FIVE COUNTIES ARCHITECTURAL ASSOCIATION.—Presidential address by Mr. F. J. Osborne, M.C., F.R.I.B.A. Royal Society of Artists' Galleries, New-street. 6.15 p.m.

Saturday, April 22.

ARCHITECTURAL ASSOCIATION.—A visit has been arranged to a factory and housing site at Brynmawr, near Newport, Mon. Party to leave Paddington Station. 8.55 a.m.

FROM "THE BUILDER" OF 1850

Saturday, April 13, 1850.

When the Emperor Augustus, to revenge the death of Cæsar, had pursued and overcome the regicides Brutus and Cassius, he is supposed to have founded the magnificent temple of which remains yet exist in Rome, and to have dedicated it to Mars Ultor, or the avenger. It was on the first scale of magnitude, the columns being 58 ft. high, and exceeding those of any other temple of which remains are found in the eternal city. The material was white marble, and the blocks of enormous size—some of the frustra of the columns (nearly 6 ft. in diameter) being 15 ft. in height. The order was Corinthian, characterised by great boldness and simplicity. . . .

This was the authority adopted by Mr. Railton for the memorial to Nelson in Trafalgar-square, now nearly completed. *(From a leader.)*

A PRELIMINARY PLAN FOR LANCASHIRE

MR. G. SUTTON BROWN, B.Sc., the County Planning Officer, emphasises the fact that this is a preliminary plan, prepared at great speed and published for circulation to members of the County Council and of the local authorities within the County, in order to ascertain their views before the Development Plan is prepared. The author and the County Planning Committee are to be congratulated upon making their preliminary proposals public in this way, because although the survey is incomplete and only diagram maps are included, what has been done has been done thoroughly, and ample information, clearly set out, is supplied as a basis for preliminary judgment.

The fact that the geographical county, 75 miles long and 45 miles wide, embraces the extremes of the banks of Windermere on the north, and the great urban and industrial agglomerations related to Manchester and Liverpool on the south, indicates the unusual complexity of problems with which Mr. Sutton Brown was confronted. The greatest complexity of all, however, is probably the further fact that within the geographical county, but outside its jurisdiction, there are 17 sovereign county boroughs, which together contain nearly two-thirds of the population of the whole geographical county. Fortunately, the county has a good record of voluntary joint planning, in which the city of Manchester was a pioneer, and one is glad to note that it is proposed to continue this admirable method of co-operation, in which the adjoining counties of Cheshire and the West Riding should certainly take part.

The county divides itself naturally into four main regions: north, the most rural and with fewest major planning problems; north-east, which contains the greatest cotton-weaving concentration in the world; west, containing valuable agricultural lands; south, in which are situated the Liverpool and Manchester conurbations with their exceptional problems of redevelopment.

For the purposes of the Plan, each of these four regions has been divided into economic sub-regions (areas defined by their industrial and social structure as coherent units) totalling 17 in all and including the 105 county districts, for each of which the results of the survey are tabulated and the items of the preliminary plan that affect their respective districts are set out.

The Main Problems.

The main problems with which the planner was faced were the facts that: (a) In Lancashire there are very few existing urban centres which do not require a measure of redevelopment, with the inevitable consequence of overspill; (b) the housing shortage is acute; (c) much of the county is rugged and some remote, and many of the most convenient sites for development comprise first-class agricultural land; (d) the industrial prospects of parts of the county are precarious and their future is to a considerable extent dependent upon Government action or factors outside the control of the town planner; (e) where coal lies under the area the position with reference to subsidence has yet to be clarified.

A wise method of approach to these problems has been adopted, namely: assessments of population, overspill, housing shortage, and industrial factors; although since overspill and housing shortage are in bulk mainly related to the county boroughs, further unification of methods of assessment will be necessary as a basis for the final plan. The necessity for the closest possible integration between the location of industry and housing is emphasised.

Population.

Forecasts, up to 1962, of natural growth (based perhaps over-optimistically on the assumption that the recent improvements in mortality and fertility rates will continue) and migration, compared with land resources, indicate that there will be a total migration from Lancashire (excluding Furness) or 104,822 people, a figure which, after taking other factors into consideration, is raised to 181,200. *N.B.*—There is no magic in a county boundary, all authorities must combine to achieve a pattern of settlement best adapted to meet human needs and aspirations.

Housing.

The author of the plan makes clear that in the first instance attention has inevitably had to be concentrated on finding house-room for the homeless, for people displaced by slum clearance and for the natural increase in population.

In ascertaining the measure of this demand and the consequent land requirements, certain approximate standards were broadly applied to the county districts, which vary greatly in their local circumstances. For the county boroughs, their own estimates had to be provisionally accepted.

For the purposes of defining redevelopment areas a dual test of age and density was applied and all houses were included which were built before 1914 at a density exceeding 24 houses per acre. This seems a reasonable test, but since such a programme would have taken 40 years to complete and a Development Plan is not supposed to look more than 20 years ahead, the immediate standard has been reduced to include houses built before 1890 at a density exceeding 24 per acre. The general maximum standards proposed for redevelopment are 15.5 houses or 30 flats (unpopular in Lancashire) per acre, and for new development, 12 houses or 24 flats per acre.

Taking all factors into account it was found that all but eleven of the 105 county districts could meet their housing needs within their own areas and that from the eleven there would be an overspill of 47,100 persons. To this must be added 592,000, the estimated combined overspill of the county boroughs, making a total of 639,100. The fact that the bulk of this huge demand for house-room is concentrated in the south region, makes overspill into Cheshire inevitable.

New Towns.

It is agreed that a relatively small portion of this overspill can be accommodated in new towns, although additional ones might be practicable were it not for the apparent local prejudices against distance from the sources of overspill. Some further inquiry appears to be required as to the extent of footloose industries and the willingness of people to move well away from the confinement of the conurbations to new towns set in truly rural surroundings. Two probables (Parbold and Leyland) and one possible (Garstang) are indicated. Leyland, five miles south of Preston and four miles north-west of Chorley, and with employment in excess of a present population of 14,490, would be the largest. An additional population of 32,900 is proposed (23,300 from the Manchester area, some 23 miles distant), making 47,390 in all. Elsewhere in the report the drift of industry in this direction is referred to and in this instance as in others the proposals of the Plan follow existing trends. The Leyland site has obvious advantages, but is perilously near Preston and Chorley and consequently the widest possible green belts should be rigorously applied and any existing encroachments thereon should be gradually but firmly eliminated.

Parbold is at present a small village of 900 inhabitants situated about six miles north-west of Wigan and 19 miles north-east of Liverpool, in the area designated "Green Belt and Rural" in the South Lancashire and North Cheshire Advisory Plan. It has the advantages of an almost virgin site and of being clear of the best agricultural land, but is rather close to Wigan. A population of 45,000 is proposed and the site is conveniently situated to accommodate overspill of people and industry from Liverpool.

Garstang, a small town of about 3,000 inhabitants, 11 miles north of Preston, appears to offer many advantages for development as a new town. The only serious fact quoted against it is that it is

The Export of Building Materials to Canada

THE end of Marshall Aid, due next year, will throw an additional responsibility upon the Exporting Industries of the United Kingdom. A considerable share of this burden (necessary to maintain our national standard of living) must fall upon U.K. building plant and materials manufacturers; how well these have responded in past years is shown by the following figures, in £ millions, for plant and materials exported:

1938, £4.66; 1946, £13.04; 1947, £16.88; 1948, £28.38.

Of the 1948 figure, £1.4 millions represent exports to Canada — our oldest Dominion — and the figure for 1949 of £2.03 shows the upward trend.

Canadian and British experts believe that these figures can be very considerably increased and that the rapidly expanding construction industry in Canada is able and willing to take much more from the United Kingdom—subject to offers being competitive in price, style and delivery.

"The Builder" has decided to investigate conditions on the spot and the Editor, Mr. Ian M. Leslie, and Mr. John B. Perks, Executive Director, are shortly leaving for Canada to obtain first-hand information. They will visit Montreal, Vancouver, Edmonton, Winnipeg and Toronto (coinciding with the Toronto Trade Fair) and will seek to find out from architects, builders and importers in what ways and with what materials and plant the United Kingdom can best help the Canadian construction industry. They will be away for three weeks.

The visit has the support of the Board of Trade (Exports Branch), the Department of the High Commissioner for Canada, and the Ministry of Works (Export Department). On their return their findings will be published in "The Builder."

some 40 miles distant from Manchester and Merseyside. On the other hand it may well be that this alleged disadvantage will prove to be unfounded when the further inquiries into foot-loose industries and population willing to be moved, previously suggested in this review, have been completed.

Conclusion.

Many more items than those that have been referred to are included in the Preliminary Plan, *e.g.*, the Road Plan previously prepared by the County Surveyor, broad but intelligent estimates of timing and finance, availability of public services, etc. The author is, however, careful to explain that the survey is by no means complete. Nevertheless, the broad picture given of essential facts and considerations is admirably clear and should provide an adequate basis for preliminary judgment. G. L. PEPLER.

CORRESPONDENCE

Research in the Building Industry

TO THE EDITOR OF *The Builder*.

SIR,—We have read your two leading articles on Research in the Building Industry (*The Builder*, March 24 and 31) with great interest, and would like to express our views on one or two points. In the first place, we do not entirely agree with all your criticisms of the B.R.S. research programme. In particular, we feel that putting research on cellular concrete and lightweight concrete into the category of "work which hardly amounts to a vital contribution to present needs" is against the weight of evidence. Both in America and on the Continent, and particularly in Scandinavia, the use of these materials has been proved to be of great value to the building industry, and developments in this country are equally promising. Apart from effecting savings in the weight of structures with economies in steelwork, the use of lightweight concrete leads to very considerable fuel economies.

In your remarks on the Building Research Station you did not mention a factor which is of vital importance to building-material producers. Before the war it was possible for the manufacturer of a material to get it examined by the B.R.S. and to obtain a report on its performance. These reports are accepted by architects as a "hall-mark" of quality. At the present time, preoccupation with the present programme and shortage of staff make it almost impossible for the B.R.S. to undertake work of this nature. In the case of new products this is quite crippling as so many architects and public bodies refuse to consider something new until a B.R.S. examination has been made. One of the reasons for the staff shortage is, of course, the low level of salary offered to Government scientists, a fact which makes recruitment difficult and which leads to a considerable turn-over of staff to industry.

This leads us to your second article on the need for an independent research association, sponsored by the industry. Such an organisation could take over from the B.R.S. such work as performance tests for the industry, in addition to the more important duties outlined in your article.

It is our opinion that your remarks should be taken to heart by every producer of building material and every builder in the country, and we trust that your appeal for the leaders of the industry to get down to considering the formation of an association receives the response it deserves and that something positive will result. J. A. RAWLINSON,

Technical Manager, MetaMica, Ltd.
Oxgate-lane, N.W.2.

Mecklenburgh-square Development

TO THE EDITOR OF *The Builder*.

SIR,—Your illustration of the proposed London House Extension (March 31) shows what a regrettable design has been prepared for this noble purpose. The remark that "the building on the left will be in harmony with London House" has, if considered in a wider sphere, a somewhat amusing air about it, and makes me thankful that men have not always considered it the best thing to keep things "in harmony" or we would supposedly still be living in caves or shacks.

Mr. C. T. Sturgess, who wrote on behalf of the Architectural Association Students, should be congratulated on his letter to the Lord Mayor, and I trust that it will not have been in vain.

BRIAN G. W. BLACKWOOD, F.R.S.A.
47, Holford-road,
Merrow, Guildford.

TO THE EDITOR OF *The Builder*.

SIR,—I have read in your issue for March 31 a pompously-worded letter by a litter of youthful and immature students purporting to have been sent to the Lord Mayor of London. In order to further help the Lord Mayor with their expert judgment and invaluable but unsolicited advice, surely they should have added a few facts about themselves to reinforce such arrogant dogmatism, such as:

(a) What professional qualifications any of them have to justify such pontifical pronouncements;

(b) How many months they have been studying architecture;

(c) How many days or hours of practical experience they have had;

(d) How many days or hours any of them have been in practice;

(e) Their average age; and

(f) By what authority they are arbiters of the public taste of apparently at least the whole of Great Britain, and precisely what steps they have taken to make them feel so certain their esteemed opinions represent the whole country.

Failing this information there is, of course, the great danger that the Lord Mayor, should he require such advice, might be forced, *faute de mieux*, to have recourse to consult the R.I.B.A., which merely contains not only the finest architects of the country but virtually all the competent and qualified ones as well.

Surely, Mr. Editor, neither Michael-angelo, Christopher Wren nor any of the world's greatest architects ever showed such marked maturity of judgment as students? And, as no one seems to know very clearly what the proposed exhibition of 1951 is for, what better than to let it celebrate England's unique possession of not one but apparently dozens of coming super-Wrens all at once?

By the way, Sir, could you tell me who it was who said "It is only the boy of 20 who *knows;* the man of 40 says 'I think' and the man of 60 says 'It would appear'"?

As one who dares to admire very much the work of one of our greatest architects, I venture to subscribe myself,

Yours in all humility,
L. A. CULLIFORD.
F.R.I.B.A., F.R.I.C.S., A.M.T.P.I.
47, Essex-street, W.C.2.

The Future of Bristol

TO THE EDITOR OF *The Builder*.

SIR,—I have read Professor Richardson's lecture on "The Future of Bristol" in your issue of March 3. The Professor is no mean critic when he sets his mind to it, and I am therefore, as a Bristolian, all the more pleased to see that he has some pretty things to say about my native city.

I must, however, challenge his statement that "the decline of taste began 40 years ago." As far as Bristol is concerned, of the public buildings put up in the last 80 years, the best are undoubtedly those built since 1918.

Professor Richardson suggests that new building must keep faith with the masts and funnels which form so prominent a part of the Bristol scene. I cannot, however, think that his "emporia . . . on the model of Paris bazaars" would be more in keeping than the "horizontal, huge and disproportionate blocks" which he deplores.

Surely, if the architecture of her new buildings is to be alive it must, like Bristol, be up to date. It should relate, not to the merchants and seamen of her past, but to the men who put the Brabazon and a number of other highly efficient machines into the air.

4, Heathcote-road, ROBERT NOTT.
Epsom, Surrey.

The Pub in the London Scene

TO THE EDITOR OF *The Builder*.

SIR,—I have read with interest your report in the last issue of *The Builder* of Lt.-Col. Codrington's remarks on London pubs. If the illustrations of modern examples accompanying the article are the best our architects can do, then let me say that I, as a frequenter of an old pub, find them dull and uninviting. Why, one of them looks like a small block of flats. What is wanted in a pub is atmosphere—the pleasant smell of beer and baccy, not hygiene and disinfectant. Were it not for the colourful array of bottles and accoutrements of the trade the bars of some of our modern pubs would look like hospital operating theatres.

I cannot help but feel that the modern pub is like the present-day beer, poor and pretty costly. OLD TIMER.
Dorking.

The Late F. W. H. Allison : A Proposed Memorial

TO THE EDITOR OF *The Builder*.

SIR,—May we crave the hospitality of your columns to inform his many friends in the profession that a fund has been opened to provide a suitable memorial at the Leeds School of Architecture to the late F. W. H. Allison, who was intimately associated with the school as student, lecturer and deputy head for more than a quarter of a century before his death in November, 1948.

As members of the Memorial Committee we believe that a large number of past and present students of the school, professional colleagues and others, to whom Allison acted as friend and counsellor during those years, will welcome an opportunity to contribute so that a sum sufficient to endow an annual prize or scholarship will be forthcoming.

May we ask that any of your readers who may wish to show their appreciation of Allison's work should send their contributions to the Treasurer, The Allison Memorial Fund, The Leeds School of Architecture, 43a, Woodhouse-lane, Leeds, 2. Cheques should be made payable to the Allison Memorial Fund.

G. DOYLE. W. A. EDEN, W. H. KING, A. B. LACY, T. H. LODGE, P. W. MARSHALL. A. V MONTAGUE and J. R. TOLSON.
Leeds School of Architecture.

Mr. W. R. Farman, of North Walsham, whose family has been connected with reed thatching since the early part of the twelfth century, working on a job near Chester.

THE THATCH REEDS OF NORFOLK

Broadland's Winter Harvest

By D. ENGLAND

IN winter, when the sails of the yachts have vanished and the wind whistles keen over the marshes, is the season when the reedsmen get busy. Reed thatching is one of the oldest of Britain's country crafts, responsible for some of the most picturesque effects in the rural scene, warmly-thatched old-fashioned cottages and splendidly thatched churches.

The reed thatcher requires only one material for the exercise of his skill—the stately reeds which grow by the million along the banks of the waterways of East Anglia. Most people know the Broads only in summer, but it is wintertime when they are deserted by all except the men who know their every mood—the eel-catchers, the mill-men and the marshmen—that the harvest of Broadland is reaped.

For when the reeds stand sere and stiff, rustling gently in the keen wind, or bending to the furious gales that often sweep across the open marshland, the men of the Broadland lay them low with their keen scythes. The reed harvest lasts until about the beginning of April, when the young reeds appear, preventing further work.

The cutters wear tall thigh boots, for sometimes they work in the water itself, and they quant their flat-bottomed boats up the shallow dykes or along the "rond"—as the bank of the waterway is called—to the site where they wish to work. Their task is a lonely one, yet to those who know and love this part of Britain, never does it seem more beautiful than in winter.

Marshmen take pride in their work, in the evenness and rhythm of their cutting, and when the reeds have fallen beneath their scythes they tie them into bundles or shooves with swift dexterity. The bundles vary but little in size, so expert is the judgment of the cutters.

Five shooves have an appropriate circumference of six feet, and they are sold by the fathom, which usually consists of five shooves, except in a few villages, where six are assembled to allow for the difference in quality of the reeds. When he is not delayed by bad weather a marshman can cut about 200 shooves a day, and they are quanted to the stackyards to season.

The reeds are often employed in the making of screens, used in gardens for shielding young trees and scrubs, but their most important use is still for the thatching of roofs, and this is a craft that has to be learned from boyhood.

In former centuries there were strict rules as to the profession of reed thatching, and a document of 1665 survives in Norwich Museum stating that the law required a thatcher to be apprenticed to his trade seven years. Another enactment decreed that every freeman in the city of Norwich had to pay twopence per quarter to the headman and warden of trade in the city, and every "foreigner" had to pay fourpence.

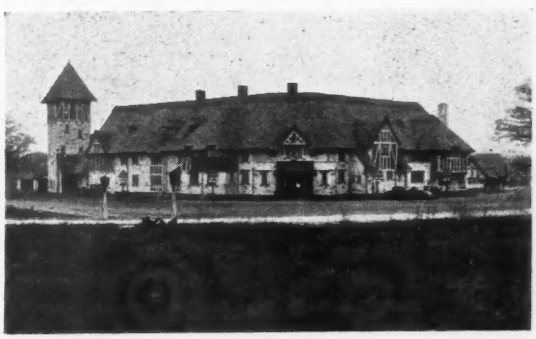
The thatcher's tools have not altered since those far-off days. Indeed, it is a moot point whether they have developed in any way since the time of the Norman Conquest. Strictly speaking the thatcher has only one tool, which is known as a "leggett," but it is indispensable to him.

It is nothing more than a square piece of wood studded with horseshoe nails. With this he strokes and taps the base of the reeds until they lie perfectly level. The skilled thatcher avoids the use of a knife, preferring to get his effects by the cunning of his hands alone. Besides this leggett he uses nothing else except a couple of needles, some twine and tarred rope.

When the thatcher fixes the reeds on to the roofs of buildings he lays them from 10 to 14 inches thick, and their durability is astonishing. Even a straw thatch is noted for its long wear, for it will probably need repair only at the end of 30 years. A reed thatch, on the other hand, will last for from 60 to 70 years. It has been estimated that if it rained without stopping for a week the water would not penetrate more than an inch through a reed thatch. Many old-fashioned farmers have a saying that cattle thrive best in a thatched barn.

Thatching is necessarily slow work. Even the roof of an ordinary building will take up to 1,600 shooves. These are not easy to handle, for they are from five to seven feet long, and working on a roof leaves not much room to move about. The thatcher fixes the shoove skilfully by means of a long hazel wand, and when working along the eaves he is most careful to see that the bottom of the shooves all lie absolutely level. Level eaves are one of the signs of a good craftsman.

It is probably true to say that although the art is not practised by so many, the reed thatchers of to-day are even more skilled than were their forebears, for besides the purely utilitarian side of their craft, such as the thatching of barns and houses, they have evolved attractive designs in decorative thatching which not long ago would have been considered impossible.



Two modern examples of the reed-thatcher's art.

COMPETITION

New Public Hall and Restaurant, for the Borough of Whitehaven

NINETY sets of drawings were submitted in the competition promoted by Whitehaven Town Council for a new Public Hall and Restaurant on a site in Lowther-street. The assessor, Mr. Harold A. Dod, F.R.I.B.A., has made the following award:—

1st (£300): H. Cullerne Pratt, A.R.I.B.A., A.M.T.P.I., and Ronald Peter Gray, M.B.E., A.R.I.B.A., A.M.T.P.I. 399-401, High-street, Stratford, E.15. (Design 35.)

2nd (£250): Muriel Harrison and G. Ellis Miles, AA.R.I.B.A., 37, Park-street, W.1. (Design 63.)

3rd (£175): Pollock, Laws and Garnham Wright, AA.R.I.B.A., Gable End, Loose, near Maidstone. (Design 85.)

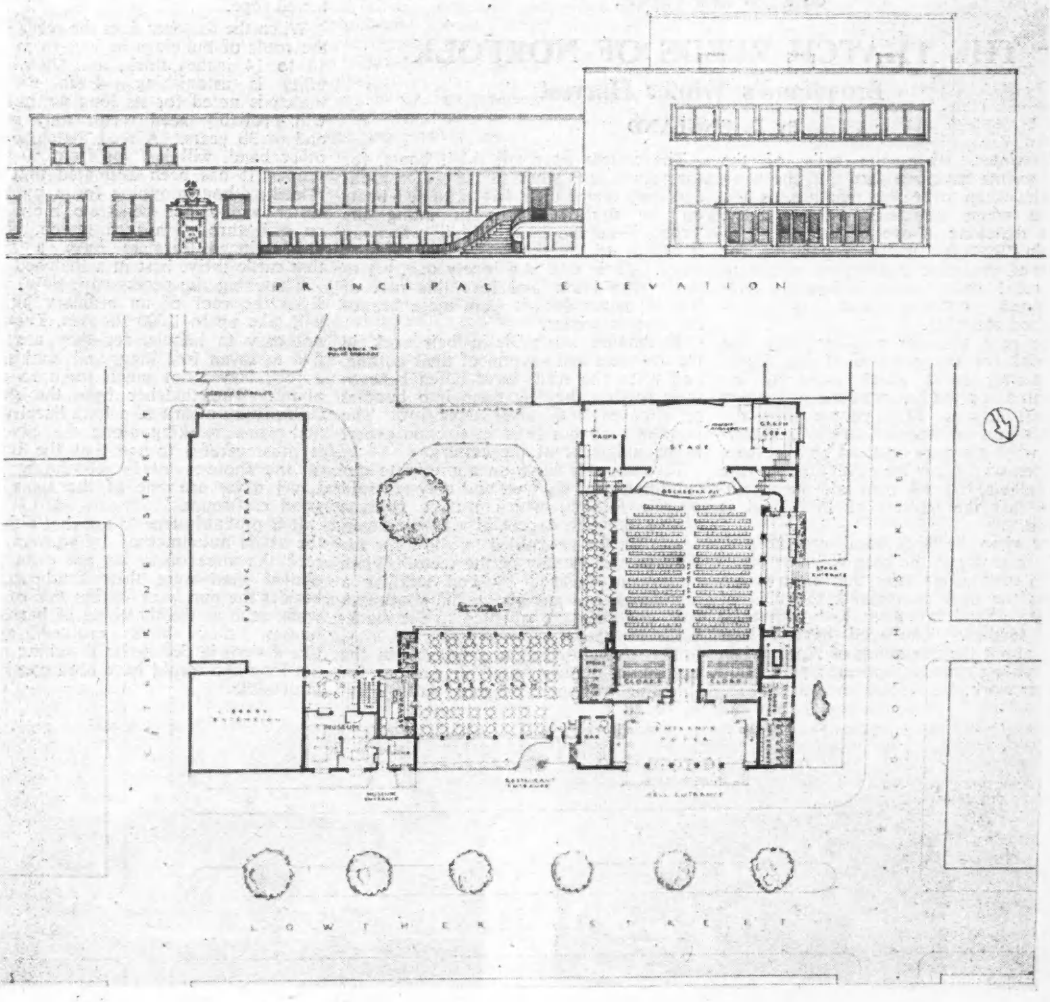
The Assessor's Award

Following are extracts from the assessor's award:—

Of the schemes submitted it was possible to discard at an early stage about 50 per cent owing to serious defects in planning, such as wrong siting of entrances and badly proportioned public halls. The remainder of the schemes, however, showed a high degree of skill in providing solutions of the somewhat difficult problems presented to competitors. The site itself presented few difficulties, but the matter of the arrangement of the approaches to the various component parts of the scheme and the proper interrelation of these parts were found to baffle many of the competitors.

After close consideration of all the schemes which appeared to contain the elements of a successful solution it was possible to narrow the choice to seven sets of drawings. Subsequently, by comparing each of these seven schemes with one another and considering the merits or otherwise of their points of difference I was able, without hesitation, to make my decision in the matter of the winner of the competition and of the two schemes to be awarded the second and third prizes.

The reports submitted by these three competitors show that they have a keen appreciation of the subject and have put forward their best efforts. In particular, I consider the report submitted by the winner was of outstanding merit, although it appears that before the scheme comes to be built there will probably require to be some modifications in the specification of the materials to be used for both the interior and the exterior of the building. There are also one or two minor defects in the planning, noticeably the lack of headroom in the small bar and the somewhat narrow service room attached to the public restaurant, and should it be your wish I should be glad either to see or communicate with the successful architect giving him my views on these and one or two other similar points.



Ground-floor plan.

WINNING DESIGN: H. CULLERNE PRATT AND R. P. GRAY, AA.R.I.B.A., ARCHITECTS

950

ef. ife enen. gel. see. teele

Th
the
the
links
gethe
Whil
itself
parti
selec
resta
roon
possi
main
hall
anot

Th
resta
this
appr
stree
and
pres
woul
on h
sche

Th
repo
some
erro
resul
rate
a tot

I
cu. f
with
figur
This
from
woul
of w

A
winn
are t
beca
ment
the e
Low
all
Cath
on
plac

Th
gooc
and
give
hall
from
mitt
as a
and
tion.
plac
form
It ha
line
Kitc
with
here
plac
Mus
and

H
boil
a thi
resta
from
Gre

C
fram
Anc
will
load
and
rant
purl

The placing of the various units in relation to the surrounding streets, the arrangement of the entrances and exits, together with the links which bind the whole scheme together, are most admirably thought out. While each section is separate and complete in itself there is a unity in the full scheme which particularly commends itself. Owing to the selection of the lower ground floor for the restaurant kitchen and also for the dressing-rooms attached to the public hall, it has been possible for this competitor to get an excellent main floor plan with the restaurant and public hall very well disposed with regard to one another.

The short external flight of stairs up to the restaurant gives dignity and importance to this part of the plan as well as a very easy approach and the elevations to Lowther-street and Scotch-street are both very pleasing and the whole group will, when complete, present a most handsome appearance. I would wish to congratulate the Committee on having obtained so good and workable a scheme as a result of their competition.

There remains the question of cost. In his report the author of Scheme 35 has made some arithmetical errors in calculations. The errors are readily observable and the correct results obtained from multiplying the cube-rate figure by the number of cubic feet show a total of £173,641.

I take the view that the figure of 6s. per cu. ft. for the hall is too high; it is possible that with certain changes in the specification a figure of 5s. or less would be more appropriate. This would reduce the total cost given above from £173,641 to £150,205, a figure which I would regard as reasonable for the amount of work involved.

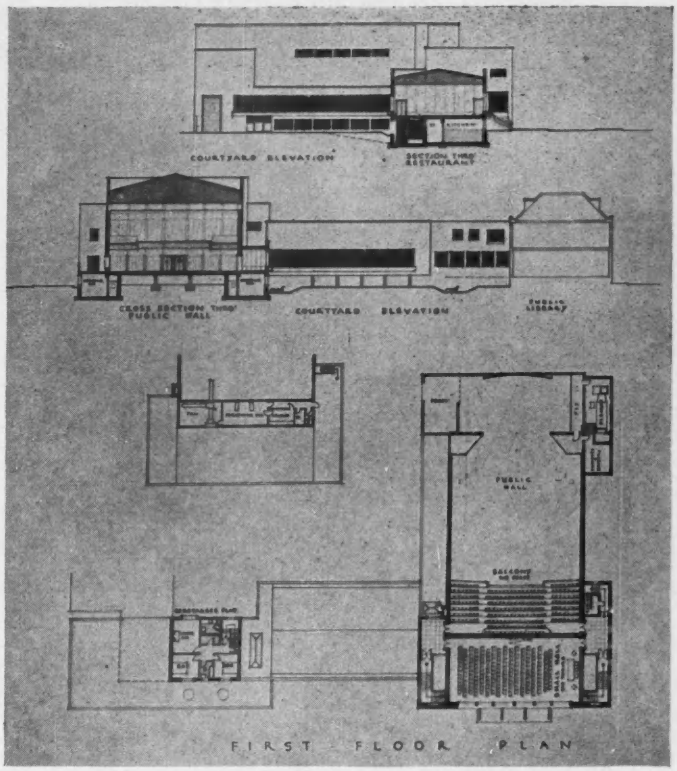
The Winners' Report

Among the conclusions reached by the winners in their report in respect of the site, are that : a basement is possible and feasible because the existing properties have basements; the bulk of the hall should be opposite the existing library and opposite the church on Lowther-street, to make a balanced layout; all service arrangements should be from Catherine-street; all public entrances should be on Lowther-street; the Museum should be placed next to the Public Library.

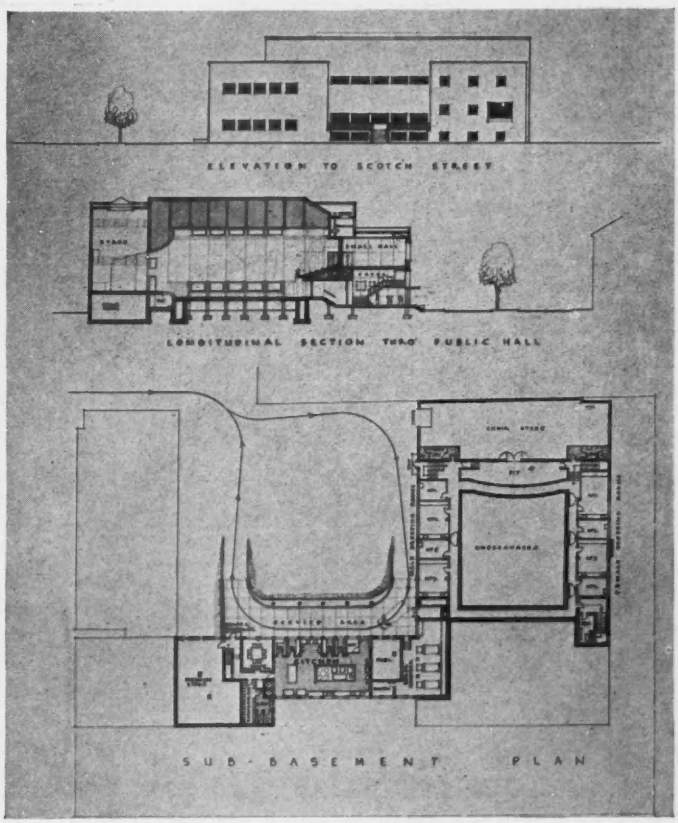
The long public hall has been designed for good speech, music and concert conditions and 190 cu. ft. per seat was adopted which gives a ceiling height of 30 ft. 6 in. The small hall is approached via two good staircases from the foyer; it is divisible into two committee rooms. The use of the entrance foyer as an exhibition hall for display of paintings and sculpture has been given special consideration. The municipal restaurant has been placed between the halls and the Museum, forming a horizontal link with the Library; It has been placed 12 ft. back from the building line to add interest to the general massing. Kitchen has been placed at basement level with service access from the courtyard. From here two lifts feed the servery in the restaurant, placed at opposite end to the entrance. The Museum is next to the public library extension, and the caretaker's flat is above.

Heating is by low-pressure hot water, one boiler for the halls, one for the restaurant and a third a booster or switch over. Halls and restaurants will be separately air-conditioned from the plenum chamber placed over the Green Room.

Construction of the halls will be steel-framed with brick cavity walls, stone faced with Ancaster on road elevations. The restaurant will be steel framed; the Museum will have loadbearing brick walls with steel stanchions and beams where necessary. Hall and restaurant will have steel roof trusses with steel purlins.

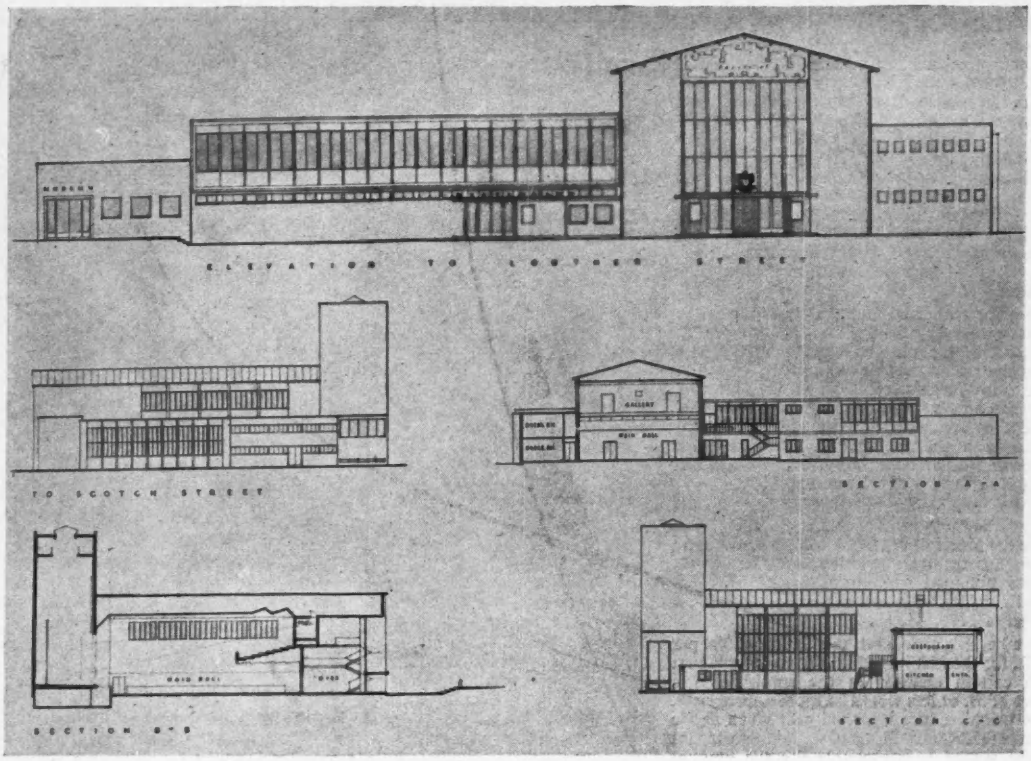


First-floor plan, elevations and sections.

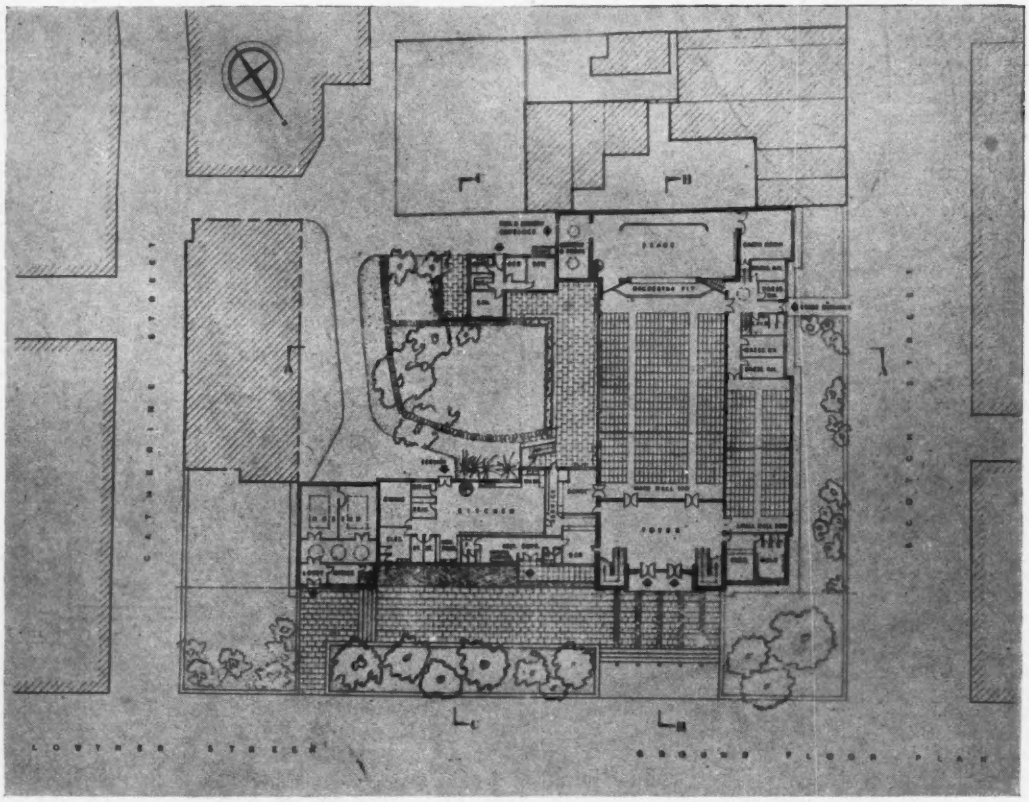


Sub-basement plan, elevation and long section.

WINNING DESIGN. H. CULLERNE PRATT & R. P. GRAY, AA.R.I.B.A., ARCHITECTS



Elevations and sections. *Below :* **Ground-floor plan.**



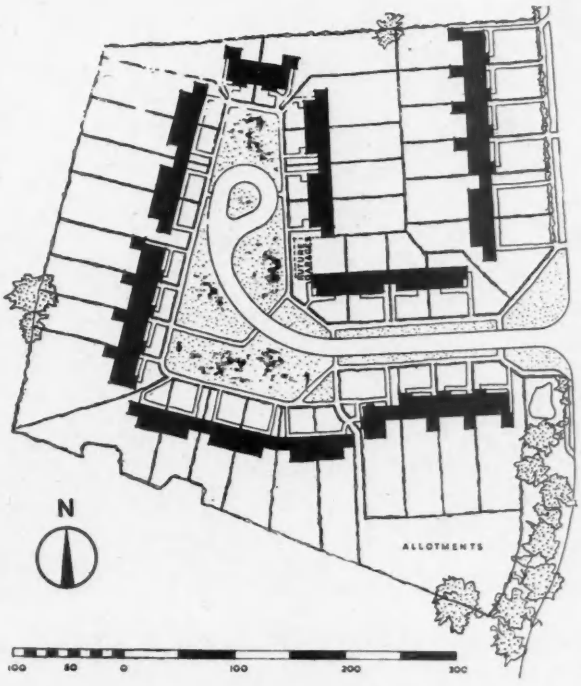
DESIGN PLACED SECOND. By MURIEL HARRISON AND G. ELLIS MILES, AA.R.I.B.A.

COMPETITION FOR PUBLIC HALL AND RESTAURANT, WHITEHAVEN

EATON BRAY : View of Close, looking north. *Below* : The layout.

THE housing problem in the rural district of Luton is similar to that in most country areas, except that a good proportion of the tenants work in industry in Luton and Dunstable, and do, in fact, require a more urban type of house. There are 22 parishes in the district and so far, 300 houses have been completed on 21 sites. These sites vary in size from 46 houses in large villages to infilling pairs of houses in small villages. The small firms of builders usually found in rural areas have been employed as much as possible, along with the medium-sized firms from the neighbouring towns, and the building of 300 houses has meant arranging 66 separate contracts, many of which were for only two houses, on basic price per foot super, negotiated with the builders. This saved a considerable delay in the earlier stages of the programme and enabled the labour of the small village firms to be used fully by reducing the " paper work " to a minimum. The houses illustrated are mainly on three of the largest sites, Houghton Regis, Toddington and Eaton Bray. The schemes at Houghton Regis and Eaton Bray are complete.

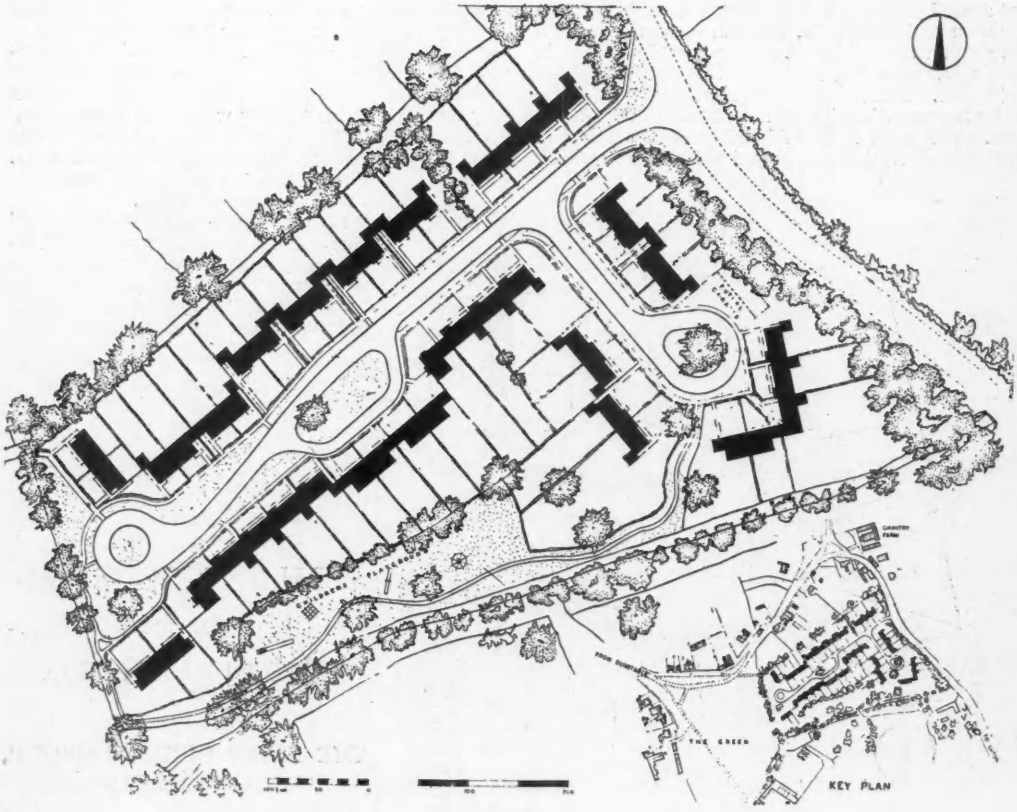
Plans :—Three- and four-bedroomed houses and a small proportion of two-bedroomed bungalows for old people were required with " parlour " and " non-parlour " variations to the three-bedroom types. There are nine standard

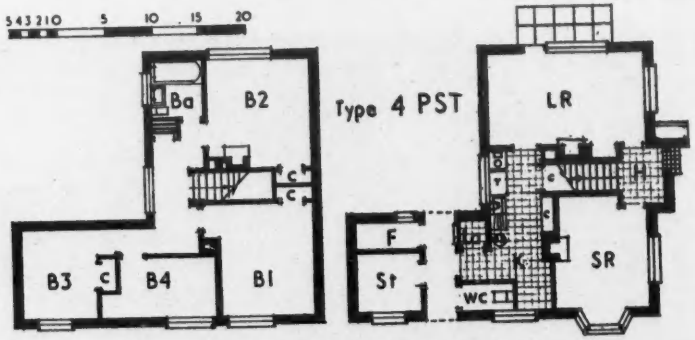


HOUSING SCHEMES
for the
LUTON RURAL D.C.

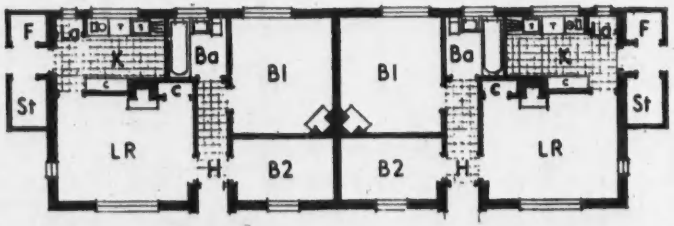
THE PETER DUNHAM GROUP, ARCHITECTS

HOUGHTON REGIS : A general view. *Below* : Layout.





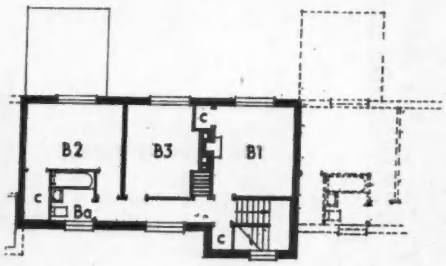
HOCKLIFFE: Plans and (below) view of four-bedroom house.

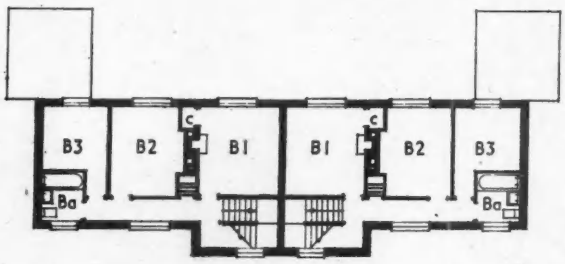


Ground Floor Plan 5 4 3 2 1 0 5 10 15 20 Type 2 OP

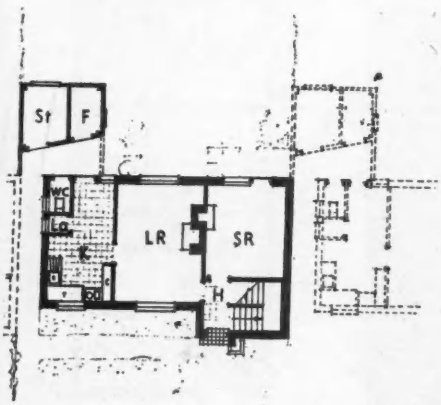
HOUGHTON REGIS:
Above and left:
General view and plan of cottages for old people.

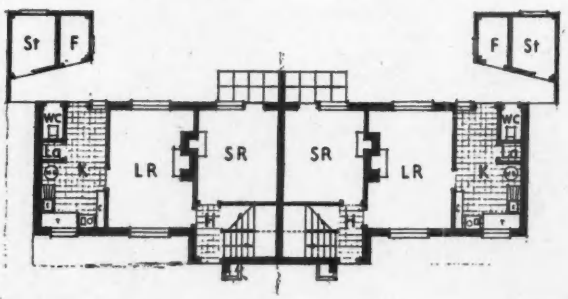
HOUGHTON REGIS : Block of Type 3 PES and Type 3 PET houses. *Below* : Plans.





First Floor





Ground Floor

Type 3 PET

5 4 3 2 1 0 5 10 15 20

Type 3 PES

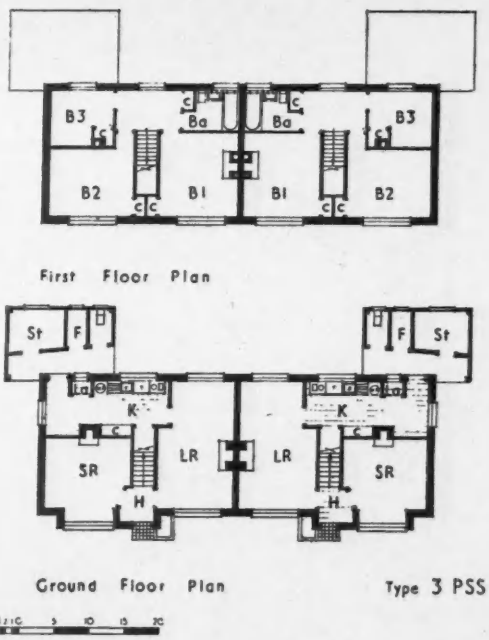
HOUGHTON REGIS : Type 3 PSS houses.

type plans with amendments to suit site conditions as required. Each terrace type has through access. *Construction* :—Traditional construction with 11-in. cavity walls, solid concrete ground floor and timber first floor and roof covered with concrete tiles.

Finishes :—Sand-faced bricks with some houses rough-cast and some painted with "Snowcem" for variety. Staircase projections on the types 3 PES and 3 PET are picked out with buff-facings on some contracts. Front doors are painted bright colours, gutters and down pipes grey and window frames white. The sitting- and living-rooms are covered with "Marley" floor tiles and the hall and kitchen with 6 in. by 6 in. quarry tiles. There are built-in cupboards in bedrooms and specially designed cupboard-hatch and table units in the kitchen. Cooking is by gas or electricity depending on local availability. "Marathon" convector fires in the living-room provide hot water and convected warm air to a bedroom.

Contractors :—The main contractors for the schemes illustrated are :—HOUGHTON REGIS : Messrs. Richardson and Bottoms, Ltd., 19, Hazelbury-crescent, Luton. TODDINGTON : Messrs. Tew Bros. (Luton), Ltd., 51, Grosvenor-road, Luton ; EATON BRAY : Messrs. D. J. Woodley (Builders) and Co., Sundon Park Estate, Luton.

Detail of Type 3 PSS house.



Other contractors employed on similar houses on other sites are :

Carter and Simpson, Luton ; A. G. Peck (Contractors), Ltd., Luton ; Robinson and White, Ltd., Dunstable ; L. R. Cole, Dunstable ; W. Gutteridge, Ltd., Luton ; U. P. Loughton, Eaton Bray ; J. Murden, Barton ; W. Brazier, Barton ; E. W. Tomblin, Markyate ; J. Newell, Caddington ; W. J. Seymour and Son, Toddington ; G. Dawson and Son, Leighton Buzzard ; H. Sanders and Son, Markyate ; A. and E. Fensome, Dunstable ; E. Miles, Leighton Buzzard ; and R. J. Parkins, Dunstable.

TODDINGTON : Four- and three-bedroom houses and old people's bungalows.

HOCKLIFFE : Four- and three-bedroom houses.

HOUSING SCHEMES FOR LUTON R.D.C. THE PETER DUNHAM GROUP, ARCHITECTS

HOUSING IN RELATION TO PLANNING

Slaying the "Three Giants"

TO provide economical housing in the future we would first have to slay the three giants—cost, labour and materials—said the HON. LIONEL BRETT, A.R.I.B.A., in a talk on "Housing in Relation to Planning" at the Housing Centre on March 28.

With regard to labour, said Mr. Brett, the problem was mainly that of bricklayers. It was a problem because there had been a violent revulsion of feeling against prefabrication methods and brick had come back into its own. In Hertfordshire the problem had reached alarming proportions, particularly in the new towns, which had lost everything to the L.C.C. The L.C.C. was erecting 2,000 dwellings at Boreham Wood and had cornered most of the bricklayers in the county. In Hatfield they were being forced back to methods of construction which many people decided some time ago had no future. They were trying to devise a basic terrace 20 to 21 feet wide which could be built without bricks.

As to the problem of materials, Mr. Brett said that timber presented the only serious difficulty. He did not think, however, that we were doing without it as much as we could. It was amazing how much uneconomical design and waste of wood was going on in the backwoods.

Referring to the problem of cost, the speaker said he could not help thinking this was bound up with things like the way in which, at the moment, housing was organised by the Government. All the architect's hard work in space-saving and neat-planning was negatived by builders who knew that the authorities would pass £1,500 as the cost of a house. One solution would be to allow local authorities to negotiate their contracts more freely in place of the practice of putting them out to tender. An amount of incredibly hard work and ingenuity was now put into the preparation of bills of quantities, but it could be dispensed with if we abolished the traditional way of building. It was obvious that there was no need for "this splendid machinery of tendering." A great deal of it was rapidly becoming a vice.

Other economies could be effected in space and materials. Mr. Brett thought we should think of housing more from the space aspect and that the next fashion in the sphere of housing would be for the two-bedroom terrace house of 600 square feet approximately. There would be a very strong resistance to it—not from the prospective occupiers but from those who were supposed to represent them, the local authorities and housing committees, because such a house would call to mind the slum terraces of a hundred years ago.

Mr. Brett gave his opinion that houses would have to be built smaller than they were to-day and he thought they could be smaller and still be pleasant to live in. We were bound to do it sooner or later if reasonable rents were to be kept.

Speaking generally of housing and planning development, Mr. Brett said that at the moment, in regard to the new towns, we were well ahead of any other country, not only because our standards were higher but because our technique was very much better established and generally agreed. He thought the layout of flats and little houses in this country was extraordinarily good as a whole.

Earlier, Mr. Brett had described how housing was being tackled in the new town of Hatfield. There were, he said, two main problems. One was that of layout and the relationship between the houses; the other was that of the individual dwellings. In the new town they were trying to apply the basic principle of the neighbourhood, although at Hatfield they were not basing their work quite so squarely and exactly on the neighbourhood principle as elsewhere, because the population was small in relation to that of some of the other towns—only some 25,000. It was desirable that a town of that size should not be carved up into sections but left with one centre where everybody could gather. Apart from the limited size of the town, there was also the fact that a great deal of the ultimate town already existed. The present population was about 8,000 and the town was very badly planned.

Referring to building density, Mr. Brett said that the reasons why most planners tried to-day to build at as high a density as they thought reasonable were, one, that they liked the look of it and, two, that it was probably more pleasant to live in. There was also the over-riding necessity of not wasting land. But economical planning was very difficult. There were, however, limitations to that principle. One was due to the fact that most people in this country preferred living in a house to a flat. You should not put families of parents and one child (with the possibility of two or three more later) up into the air; you should put them on the ground, where they could have a little garden.

The other limitation was cost. High density was very much more costly than low density. Large blocks of flats, too, were usually surrounded by open ground which had to be planted and maintained.

Some Basic Decisions.

It had seemed to him that if one worked inside those limitations one would soon arrive at a number of basic decisions. One was that every dwelling of more than three bedrooms should be a house and that one would only put into flats those families who needed a very small dwelling, say, one or two rooms. In the new towns this involved a high proportion of houses, because the greater proportion of the people coming into them would be young people. He thought the proportion should be three-quarters houses to one-quarter flats.

He had come to the conclusion that there was no reason why the houses should not be wider apart than 60 feet—at least, when they faced each other across a road. If they were only 60 feet apart at the back their gardens would only be 30 feet deep and that would be a very tiny garden. Actually at Hatfield they had provided a minimum depth of garden of 50 feet, which meant that the houses were 100 feet apart.

With regard to the height of flats, Mr. Brett said there were strong economic and æsthetic arguments in favour of mixing heights. At the moment at Hatfield they were not building any flats taller than four storeys owing to the need to produce designs quickly and because this height was more economical.

The decisions he had referred to had enforced a density of 50 to 55 people to the acre, which he thought was as high as one needed to go in the new towns. That produced a layout which was intimate but spacious.

As to orientation of the dwellings, they were trying to get the sun into every living room and, if possible, to get it to shine on to the back walls of the house. If this principle was followed too completely it involved building the houses in streets and rows and meant the sacrifice of charm in grouping.

But there were other ways of getting the sun into the living room, for example, by having the "through" living room, although this ran one into all kinds of snags, such as lack of privacy and poor proportions for the rooms. Another way was to design the house with side access so that it could be turned round either way. This would also free one from the tyranny of the row. It was almost impossible to ensure a south-facing garden without building houses in parallel rows.

As for maintenance, said Mr. Brett, it was seldom considered until it was too late, but it was of immense importance. The layout greatly affected the cost of looking after the houses. After expressing a preference for asphalt or gravel open spaces over grass, on account of the much lower cost of maintenance, Mr. Brett spoke of the appearance of houses, saying that science and economics were forcing us to a repetitive monotonous environment of identical dwellings.

All the houses in the Hatfield new town had been built in terraces, with the exception of a certain number that had been erected in pairs with a garage between, because it was desired at that point to round a gentle curve, which was very difficult with terraces.

All the rest of the houses were of two kinds: (1) Wide-fronted terrace houses 25 feet wide, or (2) narrow-fronted houses 21 feet wide.

They were building flats of sizes from the two-bedroom type to those with only one room. These were of a minimum specification, to bring down the cost. There was nothing original about them, except the elimination of the long passage down the middle. You could only get to the bedroom by going through the living room.

OBITUARY

George P. Bath, F.I.A.A.S.

We announce with regret the death at his home in Harpenden on March 28, of Mr. George Percy Bath. Born in London in 1888, he was a Fellow of the Incorporated Association of Architects and Surveyors and had practised as an architect for many years. He served throughout the first world war with the Signals section of the Royal Engineers, 47th London Division Territorials, most of the time in France. He was for a number of years associated with Mr. C. A. McKenzie Skues and had specialised mainly in shops and flats, including Tufton Court, Westminster.

Since early in the late war Mr. Bath was in charge of the architectural section of Messrs. Dyneley Luker and Moore, of 1, Lincoln's Inn Fields, W.C.2, for whom he carried out many building projects.

R. H. J. Mayhew, F.R.I.B.A., F.R.I.C.S.

It is with regret that we record the death of Mr. Robert Henry Jewers Mayhew, F.R.I.B.A., F.R.I.C.S., at his home at West Worthing. Mr. Mayhew, who was elected A.R.I.B.A. in 1901 and F.R.I.B.A. in 1923, was sometime District Surveyor for Bethnal Green and interim Surveyor for Stoke Newington.

IN PARLIAMENT

Scottish Housing

ON March 29 MR. JOHN FORMAN asked the Secretary of State for Scotland whether he would make a statement about his future plans for the licensing of private house building in Scotland.

MR. MCNEIL said that in connection with the allocations which he was intimating to local authorities that week he had considered whether it was possible to relax the control at present exercised over private house building in Scotland. Since 1947 the issue of building licences had been subject to the approval of the Central Department and, except for a period in 1949, approvals had been restricted to applications relating to the building of houses for agricultural workers, miners and key workers whose claims had been accorded priority in the national interest. Otherwise, the available resources had been devoted to the building of houses for local authorities for letting to families with the greatest housing need. Until greater inroads had been made into the waiting lists of local authorities this must remain the primary object of housing policy.

Without prejudicing this object, however, he had come to the conclusion that, since it would be in the public interest, a limited number of licences might in addition be issued for houses for certain other categories of persons whose claims similarly merit priority of treatment. Accordingly, after consultation with the Minister of Works, he proposed to inform local authorities that until further notice the Central Department would also be prepared to consider recommendations in favour of the issue of licences where the houses were intended for:

(a) Persons for whom accommodation must be provided in particular areas if essential public services were to be maintained, e.g., doctors, nurses, teachers and transport workers;

(b) Persons requiring accommodation for reasons of ill-health, e.g., tuberculosis patients;

(c) Persons who undertook to build houses in their spare time.

The size and cost of houses authorised under these arrangements would be generally similar to the sizes and prices of houses built for local authorities, although special permission would be given to exceed these sizes and costs in appropriate circumstances, e.g., in the case of a doctor who might require consulting accommodation.

He also proposed to approve the erection of about 500 houses for crofters with the assistance of the Agriculture (Scotland) Act, 1948. The building of these houses would not make any additional call on building labour for the ordinary housing programme.

He would keep this matter under regular review so that he might consider what adjustments might be necessary or possibly in the light of the progress made with the housing programme as a whole. In the meantime it was estimated that the number of licences to be issued in the extended categories together with houses for crofters approved under the Agriculture (Scotland) Act, 1948, would represent about one-tenth of the total allocations of houses to be built for local authorities for letting.

New Towns.

On March 28 MR. MAUDLING asked the Minister of Town and Country Planning what action he proposed to take on the report made to him by the Joint Committee on Financial Arrangements between local authorities and the New Towns Corporations.

MR. DALTON: None, sir. The proposals in this Report were not generally acceptable either to the New Town Corporations or to all the local authorities and direct negotiation between particular authorities and corporations will take place whenever necessary.

MR. BRAINE asked the Minister of Town and Country Planning how many new houses were now ready for occupation in each of the new towns; and if he would state the rents being charged.

MR. DALTON said the following were the figures:—

Town.	*No. of Houses Completed.*	*Weekly Rents (exclusive of rates).* 2-Bed-room.	3-Bed-room (various types).	4-Bed-room.
Aycliffe	59	17/–	20/6	—
Crawley	36	15/–	23/3 to 25/–	28/–
Harlow	31	—	21/6 to 25/11	—
Hemel Hempstead	12	22/–	22/6 to 27/–	30/–
Stevenage	20	12/6 to 25/–	—	—

Change in Use of Land.

On March 28 MR. BOSSOM asked the Minister of Town and Country Planning whether, as the amount to be paid to the Government when a change of use for certain land is undertaken was arrived at by no scientific method but by a process of bargaining, he would eliminate this anomaly where the land was to be used for houses costing less than £1,500.

MR. DALTON said he did not accept the statement in the first part of the question and he was not at present prepared to adopt the proposal in the second part. But he had asked the Chairman of the Central Land Board to make suggestions to him as soon as possible for administrative simplifications and improvements.

Home-made Houses.

On March 31 MR. USBOURNE urged that a separate department of the Ministry of Health should be set up at a distance from Whitehall and that a group of persons should be employed to work out the design of one or two or, at most, three small, simple, cheap and easily constructed houses. They should work this out in the greatest detail so that primarily they could be constructed out of materials which appeared to be available now, and which were likely to continue to be available in the future. These houses should be constructed out of parts which could mainly be made in the factories and then be sent to sites, suitably labelled, so that almost any person could put those parts together and make them a home.

There was no Government reply.

Cement in London.

On April 3 MR. GAMMANS asked the Minister of Works if he was aware that there was a shortage of cement in the London area; that building operations were being hampered on that account; and when he expected the position to improve.

MR. STOKES said that there was a shortage of cement in London due to low stocks following the very high demand during the mild winter. Nevertheless, deliveries of cement to the London area in March averaged over 1,000 tons a week more than in March, 1949. The position should steadily improve.

Soft Woods.

On April 3, in reply to MR. PORTER, MR. STOKES said that between 80 and 90 per cent. of soft wood available for building was allocated for housing, including both new houses and repairs to houses.

BOOKS

THE COMING AGE OF WOOD. By Egon Glesinger. Pp. xv, 279. (Secker and Warburg, in association with Sigma Books.) 12s. 6d. net.

THIS book was written by Dr. Glesinger before he became chief of the Forest Products Branch of the Food and Agriculture Organisation of the United Nations, and therefore expresses his personal opinions. A comparatively recent emigrant from Czechoslovakia to the United States, he was shocked on arrival there to discover the appalling waste of valuable wood, which he estimates at three-quarters of the timber felled. Moreover, he considers that about 90 per cent. of the original American forest has been cut down, and that afforestation is not replacing it quickly enough.

In his view, the existing output could be doubled within 20 years and quadrupled eventually. He regards the prodigal use of wood for fuel as one form of waste. In Sweden he finds conditions more favourable, thanks to enlightened development of her great timber resources during the war; and emphasises the efficient use of timber by the Germans before they were defeated. A lengthy chapter describes their machinations to obtain control of European forests and, incidentally, refers to their Holzwirtschaftsgesellschaft, a longish word. As Secretary-General of the Comité International du Bois from 1933 to 1946, when he joined the staff of U.N.O., the author had much to do with the rival movement.

In Europe, as a whole, excluding Russia, he estimates that timber reserves could be increased by 50 per cent. within half a century, while the possibilities in Russia, Siberia and Manchuria are limitless. Lord Boyd Orr, in his preface, appears convinced that the author's sensational claims for a "Coming Age of Wood" are not extravagant, and observes that "there are still 5,000 million acres of forests in Siberia and Alaska which have not suffered from the blight of civilisation." Apart from its obvious value in construction, which will occur to all our readers, timber has a vast field of use in other vital human needs—for rayon clothing, paper, wood-gas, motor fuel, plastics, animal-feed, and even drink—and all are thoroughly described by Dr. Glesinger.

Vivid diagrams in colour illustrate the growth, structure, deforestation (a telling map) and waste of timber. Written primarily for American readers, and evidently sent to press two years ago, the book is typically American in its use of startling captions—*e.g.*, "Attractive as Sin," "Russians in the Woodpile," etc.—but the author is an optimist and he believes in his case.

M. S. B.

FINANCIAL CONTROL FOR THE SMALL MANUFACTURER. By Francis Simmonds. (London: Jordan and Sons. Ltd.) Price 15s.

THIS is an admirable little book in many ways. The first part is a lucid analysis in simple language of the fundamental steps too often overlooked but vitally necessary to avoid "going on the rocks" through a lack of balance in the finance of the business—e.g., how to watch your cash; stock quantities; future orders; capital expenditure, etc.—and their interplay. The self-examination questions at the end of each section are an excellent method of driving home the points discussed. The second part shows

how planning and budgeting can be substituted for drift in the conduct of the business as a whole and the actual working results checked monthly against the plan. Most small manufacturers probably aim at something of this sort in their own way, but not always with success: the book shows how the process can be tackled scientifically. The point which is inherent in the book, but not stated, is the vital need for really good accountancy. Without this all the rest falls to the ground. This book should act as a stimulant, not only to the man who feels that there is something lacking in his business, but also to the professional accountant practising in a small country town, who sees continually the need for such simple advice to his clients as will prevent their gradual drift towards insolvency. It contains in the matter of 100 pages advice, which can, within the existing framework of almost all businesses, enable the proprietors to see just how and where their profits are made.

The form and presentation of the book are mostly excellent, but the separate appendices booklet is unnecessarily clumsy. Busy people read such books in trains or cars, not at desks, and have only two hands. The price is high for such a slim volume, and it is to be hoped that this will not deter from purchasing it many who would doubtless profit greatly from its study.

J. C. H.

FLOOR AND WALL TILER; STONE-MASONRY (Nos. 7 and 8 in "Choice of Career" Series). Central Youth Employment Executive. (H.M. Stationery Office.) 4d. and 6d., respectively.

THESE two pamphlets, describing, for boys and their parents, careers in two of the building crafts, are to be followed by several more, and have been preceded by a general pamphlet on building which serves as an introduction to the whole series. They are most attractively produced and illustrated; indeed the photographs depicting the various processes of floor and wall tiling could hardly be bettered, and those illustrating stone-masonry are almost as good.

It is unfortunate that, of all the remarkably good photographs in these two pamphlets, the only one which happens to have been printed out of plumb represents a mason plumbing the angle of a stone wall; but this slip can easily be rectified in a second edition. So excellent are the illustrations generally that the two pamphlets could be used advantageously to supplement ordinary manuals of building construction for students of architecture and building as well as for students of the two crafts directly concerned. The purpose of the pamphlets is, however, to give an accurate picture of each craft as a career; and each concludes, after a full description of the principal processes involved, with some information on training, technical studies, and conditions of work.

The anonymous authors have been quite honest in dealing with the last point, and have stated that some of the work has to be done out-of-doors in all weathers, and often at considerable heights. The intention of the series is commendable, and has been admirably fulfilled in these first two pamphlets.

M. S. B.

*** *Books reviewed in these columns may be obtained on application to the Publisher, "The Builder," 4, Catherine-street, Aldwych, W.C.2. Cash should accompany the order.*

HOSPITAL PLANNING AND CONSTRUCTION

M.O.H. Annual Report

THE hope that a new British tradition in hospital design will soon emerge is expressed in the Ministry of Health's report for 1949, which has just been published. The report contains a section on hospital function, planning and construction and the following extracts are taken from it:—

That hospitals should be, "out in the green fields" seems at first sight desirable, but practical considerations lead to the selection of a *site* for general hospitals as near as possible to the population to be served, preferably in a district from which nursing and domestic staff can be drawn. The desiderata are that the site be large enough having regard to the use of the surrounding land, that the levels are satisfactory for building, that the atmosphere be reasonably clean, and that the patients will not be exposed to excessive noise from traffic or other causes.

A cardinal principle of hospital planning is that account be taken of the probable future demands for space, and that the hospital be planned at the outset as a whole even if it is to grow by instalments. The area required cannot be ascertained by any simple formula, such as a ratio between beds and acres. Different kinds of hospitals have different space requirements, and the needs even of a single kind may vary. Much, besides the number of beds, has to be taken into account before a conclusion can be reached. The surroundings may call for the inclusion of land simply for the sake of amenity, but the availability or cost of the land may not warrant this. A concentrated high building may seem the most suitable or a more extended plan of lower buildings may be preferred. It may or may not be intended to house the staff on the site.

Air and Light.

A hospital should be an object lesson in hygiene and nothing short of excellence in that respect should be accepted. The value of fresh air and good natural lighting is generally recognised but the importance of the latter seems sometimes to be forgotten although both the beneficial effects of sunlight on the patient and its bactericidal powers are well known. The long rectangular ward of the typical British ward pavilion, with windows on opposite sides, ensures good lighting and the means of efficient and easily regulated natural ventilation. Not only is *cross* ventilation useful but with windows on two sides one or other side can be opened according to the direction of the wind and excessive sunlight can be excluded by blinds, while leaving the ward still well lighted. If these advantages have to be given up, much of value is lost; recognition of the loss should stimulate efforts to find other means of achieving similar results. Doctors and architects should not rest content till they have devised some form of plan which ensures thoroughly good lighting and ventilation not only of the wards but of every part of the buildings which contain the wards.

One of the merits of a ground plan consisting essentially of a number of separate buildings (even though linked by corridors) is that it permits of diversity in size and shape of buildings serving different purposes. It also lends itself to a gradual growth of the hospital over a period of years and to alteration or replacement of parts. In view of the great changes in medical practice and social conditions which occur during the long life of a hospital, this adaptability is an outstanding virtue.

A great change in the function of hospitals, which has gradually taken place in recent years and which is not peculiar to this country, has brought to the fore the merits of concentration. Even so recently as the beginning of this century a hospital was essentially a collection of wards in which patients received medical or surgical treatment. It had, of course, operating theatres, probably an out-patient department and, if up to date, a laboratory and an X-ray department, but the to-and-fro communication between wards and out-patient department on the one hand, and the various central departments for investigation and treatment on the other hand, was a small fraction of what it is now. The increased movement of persons within the hospital has prompted trial on concentration in higher buildings, replacing long, horizontal communications by shorter, vertical ones. At the same time, the large ward with 20 or more beds has fallen out of favour and the concentrated monoblock type of building lends itself to small-ward planning.

Monoblock Design.

Concentration has undoubted advantages but also certain disadvantages, and the merits of concentration can be overemphasised. There is a certain rigidity about the high monoblock. The different departments have to be fitted into a fixed outline whereas their various needs call for variety of outline of the buildings which house them. Extensions of such a building and alterations of its parts to meet changing needs are difficult and costly. Vertical traffic is very dependent on mechanical aids. Experience of failure of electric current in recent years has reminded us that serious interference with the working of a many-storeyed hospital could arise from this cause. Also, unless the provision of lifts is so liberal that for most of the time it is in excess of the needs, there are times when inconvenience and loss of time are caused by traffic congestion.

Modern conditions in many fields seem to call for centralisation, but a point usually comes when the process has to be to some extent reversed and the need for delegation and decentralisation begins to be felt. There is evidence that this is occurring in hospital planning. For example, although the advantages of centralising such a service as X-rays or laboratory are obvious, different departments of the hospital, for example, maternity, urology, orthopædics, neurosurgery, are now claiming their own X-ray plant for certain purposes while still having the services of the central X-ray department at their disposal. Similarly some units want their own laboratory as well as the services of the central laboratory. It seems, therefore, as yet by no means clear how far concentration should be carried, and one of the principal questions calling for discussion is what compromise between concentration and dispersion is likely to give the best results?

Though there is no clear trend in British hospital design at the present time, there are certainly signs of a departure from the simple pavilion plan and the large ward, and it seems unlikely that the typical ground plan of the late nineteenth and early twentieth centuries will be repeated. It is a major task for those concerned with hospital planning to consider what is to take its place, and to apply imagination and ingenuity to devising the most promising new form.

Housing Experiment at Toulouse

Flats in a Rural Area

AN interesting housing experiment undertaken by the Ministry of Reconstruction at Toulouse was designed to convince dwellers in a country district who had always lived in individual houses that life in flats was equally desirable and yet cheaper.

To arrive at the proposed object, a rationally conceived plan was evolved and the construction process designed to achieve reasonable standards of sound and thermal insulation as well as a means of carrying out construction rapidly with a degree of standardisation using existing materials.

Work was started in one of the quarters most affected by bombardment, and the principles of the Athens charter, as laid down by Le Corbusier, were respected and adapted to local conditions. The first building was started over six metres of rubble.

The need for nine-metre pile foundations was imposed by a minimum height of six floors. The scheme consists of two blocks linked at the ground floor, thus each block comprises two flats per floor —24 flats in all.

At the ground floor and basement levels each block has 12 cellars and store rooms, a boiler room and space for cycles and prams. The apartments themselves are identical and comprise a hall, one living room, three bedrooms with cupboards, a kitchen, toilet and w.c. The garbage chutes and lift-shafts in each block are insulated from the rest of the construction.

The main living rooms face south and south-west, and the balconies to the flats are so designed that the winter sun penetrates right into the rooms, while the summer rays do not pass the threshold.

The balconies are semi-recessed into the structure of the buildings, and the division between apartments is accentuated by a kind of trellis-work in reinforced concrete. The roofs, which slope at an angle of 7 deg., are of reinforced concrete slabs treated with three coats of aluminium paint.

The walls comprise bi-cellular blocks in pozzolana agglomeration, the block type being modified as occasion demanded so as to provide a shuttering for the reinforced concrete framework.

The flats under construction.

The floors are built up of reinforced beams between which the hollow pozzolana blocks are placed, the whole being linked by a compression slab.

The flooring is in pine, which has been assembled and joined on bearing joists sealed with tar. Spaces between the bearing joists are filled with a fine concrete. In the kitchen and w.c. tile floors are provided. Partitions, resting on the compression slab, are in pozzolana concrete 0.10 metres thick.

Heating is by pulsated air, each apartment being equipped with an aerotherm supplied by the central boiler. The whole of the work described was completed in 120 days.

The flats at Toulouse nearing completion.

ECONOMY IN HOUSE CONSTRUCTION

The Contribution that Architects and Builders can Make

SEVERAL means by which appreciable savings and economies in house construction could be achieved if architects and builders approached their work from somewhat less traditional viewpoints were described by Messrs. H. F. BROUGHTON and N. S. PIPPARD, of the Chief Scientific Adviser's Division of the Ministry of Works, when a paper prepared by them was read at a meeting held at the Royal Institute of British Architects on March 27.

Following is the full text of the paper:—

To build cheaply has always been the aim of the housebuilder. It is an aim which is no longer of personal interest only; since the war it has become of the utmost national importance. Even so, cheap building is so often confused with bad building that attempts to reduce costs may sometimes be viewed with suspicion.

It is, however, well known in the industry, and repeatedly confirmed in our research work, that good building is not necessarily always costly, nor bad work always cheap. Costs do not rise and fall only in relation to quality. If they consistently did so, much of our work would perhaps be simplified. Many other elements intervene, making work cheap or dear, with little or no relation to its quality.

We have studied these elements since 1945. The factors affecting building costs are many and varied, and so closely interwoven that separation is extremely difficult and sometimes virtually impossible. However, this separation has been our objective and any success we may have gained is in great part due to the wholehearted co-operation given by builders throughout the country.

We have carried out many practical field experiments, from the costing of simple operations to the detailed costing and analysis of complete housing schemes. In these field experiments our primary aim has always been the comparison of work content and cost in the execution of a building operation or series of operations.

So that we can compare house with house in detail, we use a new method of measurement, which incidentally has proved most successful and useful in many ways which we did not at first foresee.

Instead of measuring and recording under the conventional trade headings, we divide a house into the major components common to all houses; for example, the foundations, ground floor, walling, first floor, roof and so on. Within these major groups we then sub-divide into the individual operations of which they are made up. Thus the foundation consists of excavation over site, excavation in trenches, concrete in trenches, walling to d.p.c. level, etc.

Each component is a complete unit, directly comparable, wholly or in part, with the similar functional unit in any house, of whatever type or method of construction.

These methods have produced results unobtainable by other means, and invaluable in the study of house-building costs. It is, of course, recognised that such detailed analysis cannot normally be made by the builder, and that he does not always need it. The work has, however, shown us that some method of operational costing is a vital necessity in any serious attempt to economise in building, for only by such a system can the constant and varying factors in an operation be clearly exposed, and the true value of an alternative method be assessed.

Consider, as an example, the group of operations in a house foundation. It may be that due to the normal technique of completing a brickwork stage at d.p.c. level, costs at that stage can be compared with the estimate. Assuming this is possible, a rough idea of success or failure at this point to keep within the estimate may be obtained. How many can say with sure knowledge how that success or failure was achieved? Was it in the excavation, the concreting or the brickwork? Assuming still further that it can be traced, say, to the concretor's work, was it in materials or labour, and if in the latter, was it due to efficient or inefficient mixing, wheeling, or placing? Or was it due to a bad estimate? I venture to say that only a very few could accurately compare cost and estimate at this stage, and that even fewer could with any certainty trace the cause of an unsatisfactory result.

This, then, was our first aim—to isolate the causes of the wide variations in the cost of similar building operations.

Principal Cost Factors.

It is suggested that the principal factors affecting building costs may be grouped under five headings: (a) Site conditions, location, etc.; (b) labour rates and material prices; (c) efficiency of the builder's organisation, which must be linked inseparably with (d) productivity of the labour employed; and (e) design and specification.

The first two groups, site conditions and labour and material prices, are not normally within the control of the builder, particularly in these days of contract building, except in so far as any tendency they may have to increase costs may be corrected within narrow limits by keen buying and efficient organisation.

They are the factors which will always make a house built on a bad site, in an inaccessible rural area, more costly than a similar house on a good level site next to a railway siding. Their effects are to a great extent unavoidable, but with adequate drawings and information can be measured, and their cash value estimated.

The three remaining factors, organisation, productivity and design, are the really important causes of cost variation. They are all controllable, and it is to their control we must look for any appreciable reduction in our building costs.

It is fully recognised that this control, particularly in the case of design, is not usually in the hands of the builders alone. This article is therefore addressed to designers and builders alike, for we appear to be far from the ideal in which design and execution work in close collaboration to achieve efficient and economic production.

Let us consider these three factors separately. The efficiency of the builder's organisation is a very powerful influence on costs and one which affects the cost of a job from the moment the estimator begins to prepare his tender.

In our experience, estimated and actual costs of building work are related by the builder only in a very general way. The building industry is probably unique in this respect. The bill of quantities, whether prepared professionally or by the builder's own surveyor, is rarely put to any purpose other than those of estimating the cost, preparing a materials schedule, and compiling a final account.

The estimator's tender is controlled not only by the expected cost of the work but by its value in the competitive market. Frequently he is forced to take work at what he considers an uneconomic price, to keep the wheels of his firm turning. Whether or not this is the case, the basis of his estimate must be cost, and, if his bill rates are to be rational, he must consider each item in its various cost elements of materials, plant, labour, transport and oncosts. Each of these elements must be priced separately to build up the final unit rate.

Why not keep these items separate in the office copy? The advantages are surely apparent. From such a bill can be at once produced unit, operational, trade and total aggregates of estimated material, labour, transport and plant costs. Man- and machine-hour totals at the same levels are matters of simple and speedy arithmetic and a materials schedule together with the expected costs can easily be prepared.

Guide to General Foreman.

These are the obvious and immediate advantages. Let us look a little further. A spare copy of the bill, priced in its labour and plant elements only, will form an invaluable guide to the general foreman in the arrangement of his work, and enable him to check his labour and plant costs with the estimated targets as the work proceeds and to apply remedial methods where necessary and, in time, to effect a saving in similar succeeding operations.

The exchange of unit estimates from the office for unit costs from the job will simplify the tracing and checking of excessive spending and at the same time provide the estimator with up-to-date labour costs for further tendering.

In this sound cost knowledge surely there lies a golden opportunity for progressive improvement of production cost in repetitive house-building. The estimate presents the initial target at operation level, whilst every completed operation at a lower cost sets a new aim. We have frequently found that although the cost of repetitive work might be expected to decrease as the houses are completed, the reverse is often the case. It is apparent that no experience has been gained in the early stages of the contract, or that no advantage has been taken of such experience.

From a bill priced in the manner suggested the job may be programmed on an accurate and economic basis. It is suggested that the programme should be prepared with the full co-operation of the architect or clerk of works and also with that of the general foreman and site executive staff. Materials likely to be in short supply should be noted, and alternatives selected by the architect at this stage. All material orders should be placed, delivery dates ascertained and someone given the job of progressing their delivery. Sub-contractors should be nominated and arrangements made for a representative from each to co-operate with the general foreman at his level.

It may be that in present unstable conditions the general foreman should be selected for his organising and general business capacity rather than for his craftsmanship alone. It is certain that in house-building to-day he will require a far wider vision and knowledge of organisa-

tion than in pre-war years, when material prices were constant, deliveries assured, and labour output known and reliable.

The general foreman will obviously not be effective without efficient backing. What, in terms of numbers and cost, should that backing be? This will depend, of course, upon the type and size of the development, the period allowed and the position of the site in relation to the firm's headquarters.

Any attempt to establish a rigid formula for deciding the size of a site staff in relation to the number of operatives must fail because of the many variants which can affect a contract. Very little reliable information exists upon which we can make decisions and, therefore, we must at present rely upon experience to decide the maximum number of men which can be efficiently controlled by the average supervisory unit, i.e., foreman, ganger, charge-hand, etc., and whose production, time, etc., can be recorded by the average recording unit, i.e., time-keeper, bonus clerk, checker, wages clerk, etc.

It is believed that, while not accepting this arbitrarily, the cost of supervisory and non-productive site staff should lie between 8 per cent. and 10 per cent. of the weekly productive wages bill. This cost may be considered high by some builders, but it must be appreciated that the employment of small site staffs of low calibre can prove false economy, particularly in present conditions.

It is of the utmost importance to convince the industry that the ultimate cost of its product can be reduced by wiser, although perhaps greater, initial expenditure on preparation and organisation and that it is possible to determine the economic scale of this initial expenditure.

We think it will be found that for the expenditure of from 8 per cent. to 10 per cent. of his labour costs, a builder can get the *number* of staff necessary to control and supervise a job, and to deal with many of the difficulties which beset the industry to-day.

We emphasise the *number* of staff necessary, because the real problem is, of course, to find *efficient* people to carry out the appropriate duties.

General Foreman's Responsibilities.

In post-war conditions the work of a general foreman has developed into something approaching that of a general manager. Organising ability is of equal importance with trade and practical experience as a most essential factor. If we are looking for immediate improvement, we must encourage all methods of broadening the outlook of our already established general foremen, so that they will appreciate their potential value. There is a tendency for the employer to look upon the general foreman as a higher grade or superior tradesman and to treat him as such rather than as a manager. This attitude will naturally be reflected in the foreman's approach to his work and to his responsibilities.

We would like to emphasise that the long-term problems cannot be overcome unless comprehensive training in all branches of site supervision, production, recording, planning and progressing is catered for. This leads to consideration as to whether the higher site appointment should be reached only by graduation through all stages.

The other units of the site staff, such as time-keepers and checkers, are to-day often selected from the more intelligent general labourers, whilst the origin of bonus and wages clerks is frequently the very junior grades in head office staffs. Only occasionally do you find a general foreman who has graduated through all branches of site organisation. In consequence it is rare to find full appreciation on the part of a foreman of the duties of the various members of his staff, with a lack of cohesion as the result.

We consider the industry must realise that the work of each member of the site executive staff is of an importance at least equal to that of the craftsmen and that appropriate training and graduation are equally essential.

Is not this graduation vitally necessary before the executive is fully competent? Such training must finally ensure in the new type of general foreman a full appreciation of all the difficulties encountered by his various assistants in the organisation and fit him to plan accordingly, and to take complete control.

The productivity of the labour employed is to quite a considerable extent dependent upon the efficiency of the organisation, and the amount of forethought given to the planning of the work. Low productivity is not always the fault of the operative.

Materials Delivery and Placing.

Consistently good production is dependent upon the maintenance of an adequate and regular supply of materials to the site. The onus of this maintenance rests upon the ordering department of the builder's organisation. Initially correct ordering and clear delivery instructions, with the efficient progressing of supplies relative to progress on the site, are of the greatest importance.

The effect upon the operatives of recurring delays in deliveries of materials is a factor contributing to low production. This cannot be measured accurately, but perhaps in its cumulative effect it is as important as an actual shortage of materials. The presence on the site of an adequate stock of materials, over and above the immediate needs, is an assurance of continued employment and efficient management, and, as such, is a definite encouragement to good production.

With the delivery of the materials to the site, the general foreman becomes responsible for their correct placing in relation to the work in hand and the future programme. If he can rely upon regular and adequate supplies he is able more effectively to plan his work and to provide the best working conditions for his operatives.

A further responsibility of the management is to provide the general foreman with an accurate schedule of material quantities, analysed in such a way that he is able to place correct quantities in their correct position on the site of each block or pair of houses to obviate repeat handling. As the initial supply of materials is placed before the commencement of an operation, an expert knowledge of what will be needed is an essential requirement in the general foreman. He is also required to decide the position for his material stores, mortar mixers, bunkers, lime putty pits, water supply stand-pipes and many other items. Intelligent planning of these details reduces carrying time to a minimum.

Materials which are built in as the brickwork rises are stacked or stored in easily accessible positions near the building work. Door and window frames, damp-proof course materials, templates, centre turning pieces, wall-ties, lintols etc., are all required by the bricklayer, and their immediate availability reduces delay in the work. Ground-floor and first-floor frames are stacked separately, and precast lintols, etc., are carefully marked, so that the frame or lintol required comes quickly to the hand of the labourer and wasted time in sorting is avoided.

In addition to these general principles of good organisation, which, if widely known, do not appear to be very widely applied, we should like to suggest a few more direct ways in which organisation may increase production.

Results have shown that the intelligent payment of a monetary incentive has increased production and in many cases reduced final costs. In this article we cannot discuss the merits and demerits of the various kinds of incentive schemes, but it is, we think, obvious that the success of any such scheme must depend upon the accuracy of the calculations used in fixing targets and the site recording of results. We are confident that the use of the estimate on the site in the way we have suggested will go far to making the application of an incentive scheme both simple and effective.

Let us consider the economics of relating various operations to half or full working days. For example, an operation which commences at 8 a.m. and is complete at 3.30 p.m. is usually uneconomic, as the next similar operation is not likely to be effectively started that day. This, I suggest, is bad organisation. Either increase the number of men in the gang and do two operations a day, or, alternatively, reduce the number of men so that, although the operation takes the full day, it is more economic. In any such planning the effect of the alternative must of course be considered in relation to the preceding and succeeding operations.

There is a very great loss of time due to late starting and early finishing: too long meal and tea breaks. It may be that these together represent the largest single factor affecting production to-day. The general foreman feels helpless in trying to correct it. If he discharges men for being late or knocking off before time, he realises he may have difficulty in replacing them. Why not try another way? Allocate to each man or gang a specific number of operations per day; that is, arrange your bonus targets in relation to the unit of a day.

Cutting Tea-breaks.

If you hope to restrict your meal and tea-breaks to minimum times, consider some sort of meal and tea service which, by a comparatively small subsidy, will keep the men on the job near their work during these breaks. A small expenditure like this, you will find, will produce dividends in time saving. We appreciate that the conditions on every job are different and that no one can lay down a particular technique, but we are sure a little thought in this direction will be well repaid.

We do not think we have yet reached the stage where one can seriously consider the artificial lighting of the whole job, but for at least two months during winter the inside of a building is too dark to work in either well or cheaply. Your inside men are often hanging about, waiting for the whistle by a quarter to four. Winter mornings also—very often men cannot see to work inside a building until nearly nine o'clock.

A simple arrangement of portable wire-guarded electric lamps will help to get production for the full working time.

Then there are wet-day operations. Carefully plan these ahead and notify your men beforehand what is their next job for a wet day. Have the necessary materials at hand, so that the change-over is automatic and fully understood in advance.

There is, unfortunately, a good deal of

absenteeism on Saturday mornings. Absenteeism by itself would not be so serious, as the men concerned are not paid, but usually we find that a tradesman is without his labourer or vice versa, or perhaps part of a concreting gang has not turned in. The whole job can thus become chaotic; men are, perhaps, put to unnecessary jobs so that they appear to be doing something, but actual production is almost nil.

Pre-plan for these contingencies and have what might be called "Saturday morning jobs" already arranged for, with the necessary materials at hand in the same way as you would for wet-day operations.

Mechanised Pace-setting.

The use of mechanical plant is a subject which can only be dealt with fully in a separate article. The possibilities of improving organisation and increasing production are enormous. The chief reason, is of course, that a machine sets the pace, and the time that operations will take can more accurately be predicted. That very important time unit, "the day," previously mentioned, can be fully planned more easily. For example —we have recently tested a mechanical concrete barrow. It was fitted with tracks so that it would travel over almost any surface. The job was two pairs of house foundations — four houses — the usual type of job that many of us are doing continuously. The skip on the barrow, which has a bottom discharge, holds seven to eight cu. ft. The mixer was a 10/7 with a seven to eight cu. ft. discharge, so that the barrow took one complete mix each time. The mix was "all in" ballast 1 to 8.

Now there were only five men on that job and they completed the footings for four houses easily in their 7½-hour day. One man was spreading and levelling, one man on the barrow, one mixer-driver and two men behind the mixer. The barrow is also fitted with a small dozer blade and every half hour or so, when he had only short runs from the mixer, the barrow driver re-heaped the aggregate close up to the hopper for the loaders.

The longest run on these four houses took two and a half minutes, for the return journey, so that working with a three-minute cycle or mixing time on the mixer, there was always time to spare. The point is that the two machines set the time for the whole operation and the human element merely fitted itself in to suit them.

Work it out for yourselves—five men for 7½ hours—in 37½ hours they mixed and placed 25 yards of concrete: in other words, two-thirds of a cubic yard per man hour, at least double the output normally obtained to-day.

The Influence of Design.

The factor placed last in our list may be thought by many to be the most important. We refer to design; its position for discussion was chosen deliberately, because its control is so rarely in the hands of the builder. We are well aware that the great bulk of house-building is now carried out by local authorities whose architects are responsible for layout and design. In such cases the builder or contractor is faced with a *fait accompli* and his job is merely to work to instructions.

In private enterprise building, the builder is frequently either his own designer or controls the designer—an arrangement which, with all due respect, makes an appreciable contribution to economy.

A reason for the higher rates of production in speculative work as compared with contract work is frequently stated as the absence of specification control by an architect. This lack of control is sometimes exploited to the detriment of the work, but there can be no doubt that quick decisions, only possible where the builder has full control or where the most comprehensive planning and co-operation exists, are conducive to higher rates of production.

Any suggestions or comments in this connection are therefore addressed to the designer, whether professional architect or builder-designer.

For the purpose of this article we can, perhaps, deal with design in house-building under three headings: (1) Site layout; (2) house planning; and (3) differences in structural design to serve the same function.

The site layout is almost entirely the responsibility of the professional architect, and rightly so. It must be recognised, however, that in many cases, in order to achieve the ideal, very high costs are incurred in roads, sewers, drainage, fencing, paving, etc. In such cases the designer probably does not appreciate the full effect of his ideas on costs, and it is suggested that collaboration in the layout planning with a cost-conscious builder would result in economy.

Expensive Aesthetics.

House-planning is also, and again rightly, the responsibility of the professional man, but sometimes the urge to achieve the æsthetically perfect design has uneconomic results, and while obviously all planning and design should not be on an austerity basis, the price that the nation or individual is prepared to pay for beauty is of necessity limited.

It is important, therefore, that the designer should be aware, at the planning stage, of the cost of certain features. In post-war house-building there is a general tendency towards box-like planning and austere elevations, but we have encountered instances of costly dormered roofs, or recessed porches, and of single-storey back additions. Frequently one costly feature necessitated another. The back addition of a kitchen was necessary to compensate for the lost floor space in the recessed porch. This plan entailed about 20 super yards extra of external walling when compared with the normal rectangular plan of similar floor area.

The relationship of the perimeter walling to the floor area is important. Of course, within certain narrow limits, the frontage and depth of a pair of houses can be varied without seriously increasing the perimeter of the external walls, but beyond these limits any deviation from the optimum should be carefully considered.

It has always been accepted that a gable-ended roof is cheaper than one which is hipped, and even to-day the quantity surveyor will probably tell you that post-war prices indicate no difference in cost between the two methods. It was therefore surprising to find in a survey of a number of sites, on five of which the roofs were hipped and the remainder gabled, that the range of the gabled roof costs was appreciably higher than that of the hipped examples. The actual costs were: Hipped roofs from £67 to £111 per house and gabled roofs from £119 to £154 per house.

These costs were recorded some time ago, but since the war. They include the roof structures, ceiling joists, roof tiling, gable ends and first-floor ceilings. It is not suggested that the true cost difference is the difference between the averages of these ranges, but the figures do indicate the general trend. Actually, on one of the sites where both hipped and gabled roofs were used, the difference was nearly £10 per roof in favour of the hips. This case is an example of the risk involved in accepting pre-war results as applicable to post-war conditions. It emphasises the necessity for the designer to know current costs at the planning stage, and to make realistic comparisons before deciding on his final design.

Traditional Methods Can Be Costly.

In the field of structural design there is a tendency to adhere too closely to traditional methods and materials. We feel that this may be due to a lack of appreciation of present-day conditions of material and labour supplies. Even in so simple a structural design as that of the small house, it is essential to examine, or to be aware of, the differences in cost of alternative methods. We are convinced that the simplification of design results in economy. That may seem obvious, but our experience is that the designer, and, for that matter, the builder, is largely guided by a tradition which has evolved in circumstances entirely different from those obtaining to-day.

Simplification of design should be the aim, and this means the reduction to a minimum of the number of operations to complete a component. Let us again take the example of house foundations. We in the Ministry of Works have observed many methods of development from virgin ground to ground floor level; we have seen this accomplished effectively in as few as five operations, and in as many as eleven operations, both jobs on level sites and both fulfilling a similar function. An avoidable multiplicity of operations, we are convinced, is one of the major causes of low production, because of the time lost in the preparation and the clearing up for each section of the work. It may be that to achieve economy in labour by reducing the number of operations it is necessary to use more materials, or alternatively more costly materials. In such circumstances a cost comparison should be made on paper before committing the building owner to a particular design or method.

This problem of the balance between labour costs and material costs in any particular part of the structure, its finishing and its equipment, is an important one, and in house-building it repeatedly emerges in respect of equipment such as kitchen cabinets, bedroom cupboards, etc. Which is the more economic—prefabricated cupboard fronts with sides and backs built and plastered as part of the structure or completely prefabricated units which merely have to be fixed in position? Each case, of course, must be examined and dealt with on its merits, but we suggest you will find some surprising answers.

Floor Costs.

Take another example of how structural design can affect economy — the simple case of the timber first floor to a house. Are we to space our joists at 14-in., 16-in. or 18-in. centres? Our first reaction to achieve economy is to space them at 18-in. centres, as specified in so many post-war jobs. But before committing ourselves let us examine the other methods. Let us first assume that the spans to be dealt with will require 2 in. by 7 in. joists with 3 in. by 7 in. trimmers, whether the former are spaced at 24-, 16- or 18-in. centres. Now what

have we to fix to these joists? Floor boards on the top side and usually, now, plasterboards on the underside. Joist spacing will not affect the former, as boards are not normally precut to length, and can be obtained in varying thicknesses. In the latter—plasterboard—however, we are controlled, and we naturally want to save as much cutting and waste as possible. The normal plasterboard sizes are 8 ft. long by 4 ft. wide—both multiples of 16 in.—and it is obvious that the minimum of labour in cutting and the least waste must result from joist spacing at 16-in. centres. At 14-in. centres plasterboard cutting is complicated and waste is likely to be excessive. This also applies to joists at 18-in. centres unless one can get 6 ft. by 3 ft. plasterboard.

Generally, therefore, an economy in plasterboard and the labour in fixing will result from using joists at 16-in. centres, but other factors must be considered. Is this spacing economical in timber consumption? If we look at the revised M.o.W. Timber Economy Memorandum: for 14- and 16-in. centres we require ½-in. nominal flooring; for 18-in. centres we require ⅝-in. nominal flooring.

Let us convert these into ft. cube of timber for both joists and flooring in an average small house :—

	Joist ft. cube	*Flooring ft. cube*	*Total ft. cube*
14-in. centres ...	40.3	33.9	74.2
16-in. ,, ...	38.1	33.9	72.0
18-in. ,, ...	35.8	39.6	75.4

Surprisingly, we find that joists at 16-in. centres are the most economical in timber, and we suggest also in cost, because the labour element in the three methods does not vary appreciably. Another surprising feature is that the 18-in. spacing specified in many housing developments is the most costly. The choice must, therefore, be in favour of 16-in. spacing. By its use there will be saved 3½ cu. ft. of timber per house and approximately 38s. 6d. in money, and also time of fixing and waste of plasterboard. Each of us will evaluate this in a slightly different way, but it is certain that the spacing of joists at 18-in. centres is costly planning, particularly if 8 ft. by 4 ft. plasterboard is used.

These are just brief examples that the apparently economic method may not always result in an overall worthwhile saving. Let us assume we can save £1 per house in one component like the first floor by a little extra thought, and let us further assume that we can do equally well with only four other components in the house, that would mean a saving of £5 per house. If the industry's output is 250,000 houses per annum that means an annual saving to the nation of 1¼ million pounds, without detracting from the size, finish or quality of the houses.

We can assure you, however, that the potential saving in most house designs is far greater than £5 per house, and it is suggested that an interesting and instructive exercise for us all would be to examine the specifications of the work we are now handling, or about to handle, and to attempt to measure the effect on economy by the use of alternatives, either in materials or methods, or both.

It is obviously impossible to cover the wide field of traditional house-building costs in the scope of a single article. We have, however, endeavoured to give both designers and builders food for thought, and to show that careful consideration in terms of ultimate cost at the drawing board stage, with efficient organisation, will produce a dividend in cheaper houses in a shorter time.

(Crown copyright reserved)

CODES OF PRACTICE

Building Drainage

THE Council for Codes of Practice for Buildings has now issued, in final form, Code 301, "Building Drainage." This Code was previously issued as separate drafts for comment under numbers and titles as follows:

Code 301, Drainage below ground; Sub-code 3.132, Sewers and drains; 301.101, Excavation for drainage work; 3.133, Concreting of sewers and drains; 301.104, Manholes; 3.135, Sewer connections. These have now been merged into one Code and revised, in the light of comments received, by a committee convened by the Institution of Municipal Engineers.

The Code deals with the design and construction of both foul water and surface water drains and sewers between the building and the connection to a public sewer, together with all necessary ancillary works such as manholes, etc. A list of definitions includes many applying to the practical side of excavating and timbering, as well as to the design of drainage systems. Detailed recommendations are made on liaison with property owners, police and various authorities, concerning such points as the location of other services, wayleaves, the diversion of traffic, the disposal of surface water, etc. Suggestions are made regarding the time programme of drainage work in relation to other work on a building, and relevant British Standards are listed, together with brief notes on the requirements laid down in some of them.

The section dealing with design considerations contains guidance in general matters such as layouts, gradients, pipe sizes, choice of materials, connections, access and ventilation, support of pipes, traps, etc. Various methods of construction used for manholes are considered, and recommendations given regarding the size of chambers, channels and benchings, access arrangements and covers, together with the details of various types of manholes. The section also deals with certain aspects of excavation and timbering.

The work-on-site clauses deal with the practical side of drainage in logical sequence from setting out to reinstatement of surfaces.

The normal tests which should be applied when inspecting or testing drains are described, and useful hints on the maintenance of a clean and efficient drainage system are included.

Among various drawings are those showing types of concrete supports, protection of pipes, typical manholes and methods of timbering excavations. An index is included and completes this Code, which should prove of interest to all concerned with building drainage.

The Code carries the usual warning that during the present abnormal conditions it may not be practicable to take full advantage of all the recommendations.

Copies of the Code may be obtained from the British Standards Institution, 24-28, Victoria-street, London, S.W.1, price 7s. post free, reference C.P. 301 (1950).

Centralised Hot Water Supply

THE Council for Codes of Practice for Buildings has now issued, in final form, Code 342, "Centralised domestic hot water supply." This Code was previously issued as a draft for comment, and has now been revised, in the light of comments received, by a joint committee convened by the Institution of Mechanical Engineers and the Institution of Heating and Ventilating Engineers.

The Code comprises a head-code and six sub-codes incorporated in one document, the sub-codes having the following titles: Boilers, Calorifiers, Storage vessels, Pipework, Electrically driven circulators, Thermal insulation. The head-code, 342, deals with the central hot water supply in general, whilst the sub-codes cover in detail the subjects indicated in their titles. Each sub-code includes a list of the relevant British Standards, and cross references to the head-code and to other sub-codes are inserted wherever appropriate.

The Code gives guidance, at all stages, on the setting up, and the maintaining in good order, of installations to provide hot water for domestic use in buildings ranging from small dwelling-houses to hotels and schools. In drafting the Code, the committee have assumed (a) that the design of a central system of domestic hot-water supply will be entrusted to a fully qualified engineer, who will assure himself that "balance" is maintained in the system, and (b) that the execution of the work will be carried out under qualified supervision.

Copies of the Code may be obtained from the British Standards Institution, 24-28, Victoria-street, London, S.W.1, price 8s., post free, reference CP 342 (1950).

NATIONALISATION AND THE PROFESSIONS

"Need to Maintain Independence and Integrity"

THE need for the professions to assert their views about the impact of nationalisation on their callings while acknowledging the necessity for making the socialised industries work, in accordance with the will of Parliament, was urged by MR. J. R. W. ALEXANDER, vice-president of the Chartered Institute of Secretaries and former general manager of the British Gas Council, in an address to chartered secretaries at Belfast on March 31. Ingenuous assertions or placid acceptance of the idea that the individual was precluded from expressing and acting on his views or that concerns likely to be affected should be denied the right of protecting their interests must be resisted, he said.

"The professional man must not think that the issue is one for others to determine, or that participation in the controversy is inconsistent with his work," he continued. "His may be the next profession to be involved. The lawyer may find the recent extension of free legal aid to result in the larger proportion of his fees being derived from public funds, from which it is but a short step to a salaried profession for the majority.

"Architects, as more and more enter the ranks of the employed by reason of Governmental and local authority building and town planning, may become increasingly subject to direction and find less scope for the expression of their individuality. Such loss of independence in the practice of a profession is retrograde and contrary to the public interest."

Nationalisation, said Mr. Alexander, had already had some effect on the activities of the professions: the outcome could not yet be assessed, but if it was adverse it would not be to the advantage of the nation. The maintenance of the independence and integrity of the professional man was essential.

INQUIRY BUREAU

Roof Repairs

Q.—There are some problems of repair work to my property which are confusing me: (1) The builder has submitted an estimate for dismantling the whole of the chimney stack to roof level and to rebuild. What is meant by the whole of the chimney stack and what is roof level? (2) I have had pantiles removed and the roof relaid with slates. On inspection I found a "hump" in the roof over a dividing wall. The builder says the wall is at fault. New battens were fitted, but no rafters, as the roof is sound. Can you tell me what is the reason for the "hump"? The builder says the wall plate on the dividing wall is at fault. Should he have let new battens in the faulty wall plate, or replaced, or informed me of fault? C. W. L.

A.—The roof level commences on the wooden plate that rests on the termination of the main building wall and is adjacent to the eaves or gutter board. What constitutes the chimney stack is generally determined by the roof level and such part of the stack as is seen in the roof space. As there are attics in this particular instance, it is possible that the builder calculated the roof from the ceiling of the attic, in which case the matter is open to argument. Furthermore, if there is a fireplace in the attic, the stack would then only be the portion above the attic ceiling.

With reference to the second point, it is not generally known that most roofs have a sag in them, but in the case of pantiles being taken across the party wall the "hump" you refer to may not have been discernible. The builder before reslating would have been well advised to stretch a line across from the outside walls, he would then have detected that the party wall in the centre was unduly high in its relation to the battens that were to carry the slating. The brickwork of the party wall could then have been reduced by cutting away a portion and making good with a rendering of Portland cement and sand mortar; it would not appear to be a costly job as the sag caused would have to be taken out of the timber portion by placing wedges under the struts in the roof. It might probably mean new struts. In any case, the top of the party wall would have to be slightly reduced to allow for any subsequent sagging. G. W. H.

Painting: "Approved Brands"

Q.—We have a query in relation to a painting contract for which we submitted our quotation in February, 1949. A clause in the specification reads as follows: "All the distemper and paints to be of approved brands and to be delivered in the makers' sealed cans and used in accordance with the manufacturers' instructions."

The architects for this contract have now informed us that the paint to be used has to be of exceptional quality and costing approximately 44s. per gallon, whereas when estimating our price we allowed for a good quality paint at about 37s. per gallon. Therefore, we should like your views on what you consider to be an approved brand of paint and distemper. P. A. AND CO.

A.—The clause in the specification which, by submitting an estimate you accepted, clearly states "approved brands" and the decision of approval is in the hands of the architect absolutely. The question of an adjustment for the difference in the cost per gallon of the paint chosen and the cost per gallon of the brand of paint you had in mind when estimating cannot be pursued.

Had you added a variation in cost clause to the form of tender when submitting your estimate, giving the cost of the materials upon which your estimate was based, on completion of the work a claim for increases in cost would no doubt be accepted. V. C. A.

Claim for Discount on P.C. Item

Q.—Clause 22 (a) of the R.I.B.A. General Conditions of Contract reads as follows: "22. Where prime cost or provisional sums are included in the Bills of Quantities in respect of any materials or goods to be fixed by the Contractor,

(a) Such sums shall be deemed to include 5 per cent. cash discount and the term prime cost or the abbreviation P.C. as used in these conditions shall be understood to mean the net cost to be defrayed as a prime cost or to be defrayed from the said provisional sums as the case may be after deducting any trade or other discount except a cash discount of 5 per cent.

I have now received a final account from a contractor which includes, in connection with a P.C. item for bricks, a claim in respect of 5 per cent. cash discount. The supplier of the bricks did not give any cash discount, and the contractor maintains that, as the contract says that the sum shall be deemed to include 5 per cent. cash discount, he is entitled to recoup the net sum paid to the supplier of the bricks, plus an added 5 per cent. as a discount which would have to be paid by the council.

I shall be pleased to have any views you may be able to obtain on this question. A. M.

A.—You ask for views on a most interesting though contentious matter. The views given will be varied and I believe in accordance with individual interpretations of the clause. I understand that the Joint Consultative Committee of the R.I.B.A. and the N.F.B.T.E. have this particular clause in mind, so that in the near future we may expect some official clarification, or possibly see the clause re-worded.

This is how I view the matter: subclauses (a) and (b) must be considered when such a claim is submitted. The three main conditions at issue mentioned in clause 22 are: (1) "Such sums shall be deemed to include 5 per cent. cash discount." (2) "All payments by the contractor for such materials or goods shall be in full and shall be paid within 30 days of the end of the month during which delivery is made." (3) "Provided that the contractor shall not be bound to place an order for the supply of materials or goods with a nominated supplier who will not agree to allow such 5 per cent. discount for cash."

Re condition 1: To add 5 per cent. to the net cost cannot rightly be regarded as a discount, but if condition 2 has been fulfilled and proof is supplied, it would appear that the contractor is entitled to receive a payment equal to 5 per cent. discount.

Re condition 3: If the materials or goods specified are only available from one source, this part of the clause becomes null and void; if the materials or goods are obtainable from a number of sources but in each instance no discount is allowed, the contractor should be notified of this before signing the R.I.B.A. form of agreement and if not so notified is justly entitled to payment. V. C. A.

Sound Insulation in Block of Flats

Q.—Clients of ours have recently acquired, after reinstatement of war damage, a block of flats. The property as originally constructed comprised large family flats, which owing to changed conditions have since the war been converted into smaller flats, incident to which a considerable amount of war damage reinstatement was carried out.

The building, which comprises ground floor and four upper floors and a basement, contains some 32 flats averaging about 3 rooms, plus kitchen and bathroom, and is, we should think, some 50 or 60 years old. It is of the usual brick construction with timber-joisted floors and seems to be particularly solidly built.

Unfortunately, there seems to be considerable cause for complaint as regards impact and airborne noise; even ordinary conversation can be heard in rooms above and below where it is occurring, and footsteps and the ordinary moving about of occupants is very audible.

On investigation it appears that in course of war damage reinstatements many ceilings were renewed with plasterboard in place of thick lath and plaster. To attempt relief by the provision of glass wool blanket beneath the floorboards is, from the points of view of disturbance and cost, scarcely feasible.

We shall be grateful if you can suggest a practical alternative. The walls separating the flats from each other are generally 9 in. thick and in many cases there is also an intervening corridor. The leases provide that tenants will "cover the floors with felt or other material to deaden sound, in addition to the usual

carpet and linoleum." It is clear that many tenants have not strictly complied with this, but that where there are good thick carpets and under-felts there seems little cause for complaint.

CHARSON.

A.—I consider a most satisfactory method of increasing the sound insulation of a floor is to fix a floating floor though this increases the height. Cover the existing floor boards with an eel grass quilt or slag wool quilting or ¾-in. fibreboard. Rubber or heavy felt strips can be fixed to the wood joists and the final flooring. The skirting must not be fixed rigidly to the floor but isolated by felt or fibre. If it is at all possible, I suggest the best method is to take up the floor boards and fix the quilt or fibreboard direct on the joists. The floating floor must have no contact with the walls.

With reference to ceilings, these should be suspended or entirely isolated. One method is to remove the plaster, clean the laths, and fix 2-in. by 1 in. felt or rubber-lined clips to the ceiling joists. Fix fibreboard or eel glass quilt and finally fix ⅜-in. plasterboard, scrim joints with cotton joint tape and set. Alternatively, fix ¾-in. fibreboard on the rubber clips. Cover the joints with Anaglypta border and distemper; or, fix ½-in. plasterboard direct on the felt or rubber clips, having first removed the old plaster. Cover the joints with cotton joint tape, crossline the ceiling with heavy lining paper and distemper. Avoid joining the ceiling insulation with the walls. A suspended ceiling can also be made by using 2-in. by 1-in. wood battens held in clips in which there is either a layer of felt or rubber. The battens can be fixed in the opposite direction from the ceiling joists if thought advisable and the spacing must be regarded with reference to the thickness of the fibreboard, which must not be allowed to sag.

G. W. H.

[A list of proprietary materials and suppliers has been forwarded.—ED.]

Development Adjacent to Railway

Q.—I am at present concerned with the development of a new factory adjacent to a main railway line in the country. This line is in a cutting approximately 12 ft. deep. I do not intend to build within 50 ft. of the railway boundary at the top of the cutting, but the railway authorities have requested that all buildings be set back 100 ft. from the boundary.

I do not know of any legal grounds for this request, and would be very grateful for any views you have on this matter or any assistance in obtaining the bye-laws relating to such a case.

GREENWILLOW.

A.—A legal correspondent writes: At the moment, there is no legal problem. What your correspondent should do is to communicate with the railway authorities and request, as a matter of courtesy and right, to be told on what grounds the request has been made. It would be idle to speculate as to what the authority for the request may be (for instance, are the railway authorities endeavouring to suggest that the 100 ft. be made a "condition" of permission to develop being given by the planning authority, and the request has come from the railway authorities and not the latter?), but the method of approaching the matter is clear.

Having obtained the information, your correspondent will then be in the position to take any legal steps available to him to contest the matter, if any exist.

TIMBER DEVELOPMENT

Annual Report for 1949

THE increased interest shown, particularly during the latter part of last year, in the newer timbers, especially those from the tropics, is referred to in the 1949 annual report of the Timber Development Association, recently issued. The report states that, following the decontrol of hardwoods, interest in the new timbers was even further stimulated by the pressure which the Government brought to bear on the various branches of the building industry to use the newer hardwoods in place of softwoods whereever practicable.

The Association has been working hard, the report adds, to collect all the information available on these timbers, especially from a practicable point of view—*i.e.*, advantages and disadvantages from the user's point of view.

Another item in the report concerns laminated timber construction in farm buildings, and states that the Technical and Constructional Research Department has designed a form of glued laminated timber arch which may be incorporated in a prototype batch of components for farm buildings for which timber has been allocated by the Ministry of Agriculture and Fisheries. By this means it is hoped that valuable information will be obtained concerning the suitability of laminated timber construction for agricultural purposes.

An interesting illustrated section in the report includes photographs of various designs in which different methods of timber construction have been employed.

SPEAKING at the 16th annual general meeting of the Timber Development Association, held on March 23, MR. T. A. STOREY, the retiring chairman, said that the Association was concerned with two main considerations, namely: the exploration of all channels which would increase the competitive value of timber, and the presentation of information collected in such a way that it appeared most attractive to the consumer.

He further stated: "The turnover of our industry, even before the consumer adds to its value by his processing, totals something like 130 million pounds a year, and it is in the light of this enormous sum that we must consider the efforts we, as a trade, must put forth to preserve our markets. I hope you will have been conscious of two aspects of our work during the past year; firstly, that to a constantly increasing extent the trade is securing representation at the highest technical and political levels; secondly, that in our permanent staff there is an enthusiasm and a growing experience which, as the calls on our own time increase, must be vital to our future."

WATerloo 6314 (6 lines)

AYGEE

GLASS
GLAZING
LANTERN LIGHTS
METAL WINDOWS by
England's Largest Glazing Contractors

100, Westminster Bridge Road
LONDON + + + S.E.1
'phone: WATerloo 6314 (6 lines)

The Hall Mark AYGEE *of Craftsmanship*

HIGHER EDUCATION IN BUILDING

Scholarships for 1950

THE BOARD OF ADMINISTRATION of the Southern Counties Scholarship and Welfare Fund for Higher Education in Building has now published details of the conditions of entry and scholarships offered for award in 1950 to students interested in a career in the building industry.

Again the Board has in mind the award of not more than three scholarships, but does not undertake definitely to do so as this naturally depends upon candidates reaching the required standard in the examination and satisfying the Board in the course of interview. Subject to the conditions, the value of the scholarships range from £50 to £200 per year for two or three years—one scholarship being for the degree course in building technology at Cardiff University (a three years' course); and the other two being for the three years' course for the Higher National Diploma in Building and the two years' course for the Ordinary National Diploma in Building.

So far as concerns the industrial training which is contemplated not merely for successful scholars but for others interested in the industry on the management side, the detailed Scheme of Industrial Training is expected to be ready for publication shortly.

Further information regarding the scholarships for 1950 may be obtained from Mr. S. R. Gerdes, Secretary to the Board, Sterling Buildings, Carfax, Horsham.

C.U.J.C.

Election of Officers for 1950

MR. J. STANLEIGH TURNER, J.P., a part-time member of the East Midlands Division of the National Coal Board, has been re-elected President of the Coal Utilisation Joint Council for 1950 and Sir John Charrington, President of the Coal Merchants' Federation of Great Britain, has been re-elected Vice-President of the Council.

The Council's Annual Report for 1949, which has just been issued, says that their policy continues to aim at encouraging the installation of modern domestic solid fuel appliances in both new and existing houses, stimulating better service for the consumer from the appliance trade, and securing the more efficient use of solid fuel. By these means, the Council hope to ensure satisfaction in the use of solid fuel and to achieve a better standard of heat comfort in the home.

NEWS IN BRIEF

M.T.C.P. Circular.

The Ministry of Town and Country Planning have issued Circular No. 84, which concerns the National Parks and Access to the Countryside Act, 1949. It is obtainable from H.M.S.O., price 2d.

A Third Edition.

Owing to the demand for "Concrete Simply Explained," by Victor S. Wigmore, the third edition has now been printed. The text has been revised for this edition and also includes details and instructions for the use of the Wigmore consistometer at the site for testing the workability of concrete.

Society's "Coming of Age."

The National Smoke Abatement Society is this year celebrating its coming of age, and an article in the new issue of its journal, "Smokeless Air," surveys the progress it has made since 1929 in building up an organisation that has succeeded in making the problem of smoke recognised as one of high national importance. It is the story of a difficult, but persistent, campaign that has built itself up despite what is described as "the ever-present frustration of the almost empty pocket."

Isle of Man Housing Costs.

The Isle of Man Government's proportion of housing costs is reflected in an estimate for 1951 by the chairman of the Local Government Board, Mr. J. F. Crellin, Member of the Legislative Council. The sum of £275,670 includes an item of £130,000 for permanent houses and £50,000 for private building. The L.G.B. estimate for their normal work is £20,810, of which £10,540 is for administration. Expenditure by the Highways Board in 1951 is estimated at £103,850, of which over £90,000 is for road work.

Building Exhibition, Shrewsbury.

Shrewsbury's Building Exhibition, organised by the Ministry of Works and Shrewsbury Technical College, was opened at the College on March 24 by Viscount Bridgeman. The exhibition was designed to have a two-fold appeal to members of the building and allied industries by providing an opportunity of becoming acquainted with technical developments, especially those resulting from recent research; and to the general public—parents in particular, and young men of a school-leaving age—by demonstrating the many possibilities of a career in skilled crafts.

A First Annual Report.

The first annual report by the Board of Trade on the working of the Monopolies and Restrictive Practices (Inquiry and Control) Act, 1948, was published by the Stationery Office on March 16 (price 4d.). The report has been laid before Parliament. The Act lays down that the Board of Trade should make a report each year about the operation of the Act in the previous year. This first report deals with the period from the passing of the Act in July, 1948, to the end of 1949. It describes the setting up of the Monopolies and Restrictive Practices Commission and shows the references which have already been made by the Board of Trade to the Commission. The Act also requires the Board of Trade to include in these reports a survey of the suggestions and requests made to the Board for references of matters to the Commission. This survey is contained in Part 2 of the report.

Netherlands Art Week.

The Workers' Travel Association, Ltd., Eccleston Court, Gillingham-street, London, S.W.1, have organised a trip to Holland for the VI Netherlands Art Week, which is to be held from August 10-18, 1950. Further details can be obtained from the above address.

Apprentices at Company Dinner.

Two Wandsworth stonemason's apprentices were among the guests of the Worshipful Company of Masons at their recent annual dinner in the Grocers' Hall. They were invited by the Master, Major H. R. Watling. "All the City Livery Guilds are proud of their trades," he said, "and I feel that craftsmanship should be encouraged in these days when it means so much to the future of British industry." It is hoped that the innovation will be continued at future dinners.

Little Theatre Erection.

After a lapse of eight years, a building licence has been granted and a start is being made on the erection of the Hall Green Little Theatre, of which Sir Laurence Olivier is now president. The work is being carried out by amateur actors in their spare time, and the first two sections of the theatre are scheduled for completion by next spring. Additional labour is badly needed. Those wishing to help should contact the secretary, Keith A. Pickering, 93, Reservoir, Selly Oak, Birmingham 29.

Company Registrations.

According to information received from Messrs. Jordan and Sons, Ltd., company registration agents, 116, Chancery-lane, London, W.C.2, company registrations at Bush House, London, during the period between January 1 and December 31, 1949, included 78 private companies dealing with bricks, cement, etc. (capital £822,800); two public companies of builders (capital £35,000); 1,104 private companies of builders (capital £3,995,785); and 142 private companies dealing with timber (capital £1,669,750).

10th EDITION REVISED

HOW TO ESTIMATE

for Every Class of Building Work

By J. T. REA

This well-known standard work is now reprinted with an important new series of comparative tables giving full details of:

(1) Increases in cost of Building Materials for years 1937, 1939, 1944, 1945 and 1946.
(2) Increases in Labour Rates and percentage increases for the above five years together with the Wages Increase and Bonus Incentive introduced in Oct., 1947.
(3) Average relative proportion of each trade to a complete building operation with ratios of Labour to Material in each Trade and approximate percentage increases for the respective years, 1937-1946.
(4) Percentage Cost of Building Work as at 1914 compared with the years 1920-1946.
(5) Notes on the Acts and Regulations affecting the Control of Civil Building, War Damage Claims, etc.

730 pages with over 600 illustrations.

Large 8vo. Cloth gilt. Price 18/- net (by post, 18/9.)

B. T. BATSFORD, LTD.

15 North Audley Street, London, W.1

The Derby Gold Medal.

The Liverpool Engineering Society at its annual general meeting on March 29 last, awarded the Derby Gold Medal to Lieut.-Col. W. P. Andrews, M.C., B.E., of the Roads Division of the Cement and Concrete Association, for a paper entitled "Modern Concrete Roads."

Week-end Conference.

The National Institute of Industrial Psychology is holding its annual week-end conference at the Palace Hotel, Buxton, from April 21 to 24, at which members will be invited to help in drawing up a "modern personnel policy for the hypothetical manufacturing company."

Student's Prize.

Mr. B. N. L. Whiteley, 20-year-old architectural student of Wallingford, Berks, has won first prize in a measured drawing competition arranged by the Berkshire Society of Architects. Mr. Whiteley's winning entry was of Ewelme's (Oxon) ancient village school. The prize will be given by the Berkshire Archæological Society, and it will be presented at the annual meeting of the Berkshire Society of Architects.

Houses Without Back Doors.

One-door houses have been approved for Pennal, North Wales, after the rural council had heard a report by the architects that the houses were designed to take full advantage of the view. Members of the council expressed the opinion that back doors were essential in modern houses, but the surveyor said there had never been any statutory demand for back doors in that type of house and the plans conformed to the Ministry of Health's recommendations.

Register of Land Dealings.

The Central Land Board (Register of Dealings in Land) Regulations, 1950, have been published by the Ministry of Town and Country Planning. They provide for the keeping by the Central Land Board of a register of their dealings in land for public inspection. The register is kept at the head office of the Board, but copies of entries relating to land in England are kept in the local office of the Board for the region in which the land in question is situated and copies of entries relating to land in Wales are kept at the office of the Board in Wales. The register, and copies of entries, are available for inspection by the public during the usual office hours at the head office of the Board and the appropriate local offices. Copies of the Regulations, price 1d., are obtainable from H.M.S.O.

Some Common Defects in Brickwork.

A useful booklet for the practical builder has recently been published—"Some Common Defects in Brickwork," National Building Studies, Bulletin No. 9, published by H.M. Stationery Office for D.S.I.R., price 1s. 3d. (35 cents U.S.A.), by post 1s. 4d. Six common causes of defects are given and their diagnosis, methods of prevention and repair are explained in straightforward language. Some valuable but brief notes on keeping brickwork reasonably dry and thus free from some of the defects are given in an appendix. The six causes are sulphate attack on mortars and rendering; unsound materials; frost action; corrosion of iron and steel; crystallisation of salts; linear changes resulting from changes in moisture content. Each type of defect is shown in photographs and the text is arranged in a form which will make reference easy.

Building Boards.

The consumption and stocks of building boards in the United Kingdom in the periods from July 2, 1949, to January 7, 1950, were as follows (figures are given in thousand tons): Period—nine weeks to Sept. 3, 1949, consumption, 11.1, (stocks at end of period, 35.2); nine weeks to Nov. 5, 1949, 20.3 (32.4) and nine weeks to Jan. 7, 1950, 16.7 (32.1).

Community Centres.

The National Council of Social Services, 32, Gordon-square, W.C.1, have just published a handbook of information for community centres and associations, entitled "Our Neighbourhood." The book gives the how, why and wherefore of a community association—there are chapters dealing with "What it is and how it works," "The Building," "Activities," "Staff" and "Administration." The book is illustrated and the price is 4s. 6d.

Dictionary of Colours.

The British Colour Council, 13, Portman-square, London, W.1, have recently published a dictionary of colours for interior decoration. It is in three volumes, the first and second containing colour charts, in loose-leaf form, illustrating colour on three surfaces—glass, matt, and on pile fabric—to enable designers and producers of the materials used in interior decoration to visualise the colours in any finish, and the third containing an index. The price of the complete publication is £12 12s. to purchasers in the United Kingdom. Further particulars and order forms can be obtained from the British Colour Council at the above address.

PRESTRESSING CONCRETE

A New System

A NEW method of prestressing concrete which has been developed by H. Donovan Lee, M.Inst.C.E., M.I.Mech.E., in conjunction with Messrs. McCall and Co., Ltd., of Sheffield, was demonstrated at the Ministry of Works Field Test Unit, Barnet, on April 5.

The system uses a new alloy steel, in bars of diameters from ¼ in. to 1 in., with a new type of high-efficiency nut at the ends. This steel has an ultimate strength of 70 tons per sq. in. and an equivalent yield stress of over 58 tons per sq. in. The prestress is applied by a new type of mobile jack, which is attached to the threaded end of the bar to be stressed and thrusts on the end plate of the member being prestressed. The nut is tightened while the bar is stretched, and the necessary stress on the bar can be measured by the pressure gauge on the pump, and checked, if desired, by a pocket gauge. Grouting in of the bars is recommended to give the best performance in the event of overloading, but the end plates and nuts are designed to withstand the full ultimate strength of the bars.

A test was carried out on a 50-ft. beam weighing 5 tons and designed to carry 9 tons of live load. It was gradually submitted to a load of twice that for which it was designed, which caused cracks to appear in the bottom flange. As the loading proceeded, the deflection of the beam could be seen on a central gauge. After the overload had been removed the cracks had completely closed up and were invisible. There were three bars of ¼-in. diameter in the lower flange and one of the same diameter in the upper. The total tension applied to these bars was about 90 tons. The beam was made of precast sections jointed together.

TRADE NEWS

Workers Share Firm's Profits.

On March 27, 11,458 workers at Vauxhall Motors, Ltd., shared £91,991 under the firm's profit-sharing scheme. Since the scheme started in 1935 over a million pounds have now been paid out. This year's distribution is about 40 per cent. higher than last year. The average per worker is £8 0s. 7d.

Bitumen Paint.

Berry Wiggins and Co., Ltd., Field House, Breams Buildings, Fetter-lane, London, E.C.4, have issued a new booklet—"Tensulac Bitumen Paint." The booklet shows the advantages of bitumen paint for protecting iron and steelwork, and gives methods of application, directions for use and also the specifications of different grades of "Tensulac."

Floats for Ball Valves.

As the new Portsmouth type ball valve to BSS. 1212 is now coming into use, it is, perhaps, necessary to point out the advisability of ensuring that the correct size of float is fitted to the appropriate valve. Table 4 of the specification sets out the diameter of the float to be used for high, medium, or low pressure and also in relation to the bore of the loose seat. With the M.O.H. or J.C.S.W.R. ½-in. ball valve, a float of 4½-in. diameter was originally used. With a ½-in. bore loose seat a 5-in. diameter float is now necessary for H.P. and 4½-in. diameter for M.P. or L.P. while with a 3/16-in. bore loose seat, a 6-in. diameter float is necessary for H.P. Also for the larger sizes of valves, it will be advisable to ensure that the screwing size of the boss of the float corresponds with the screwing of the lever. This is laid down as 5/16-in. Whit for ¾-in. and ¾-in. valves; 7/16-in. Whit for 1-in. and 1¼-in., and ½-in. Whit for 2-in. Copies of the tables giving the weights of the floats, and the diameter for each size of the valve, can be obtained free from The Mint, Birmingham, Ltd., Birmingham 18.

A NEW PARQUET FLOOR

"THE WINDSOR FLOOR"

Patent Number 544228

- SEASONED OAK
- CHEAPER THAN ANY OTHER HARDWOOD FLOOR
- AVAILABLE NOW

SOLE AGENTS:

ONSITE FLOORING CO.

12, WIGMORE PLACE, LONDON, W.1

LANGHAM 2256

New Rust Removing Material.

To meet the increasing demand from industry for a general purpose and economical rust removing material, the Pyrene Co., Ltd., have recently introduced a new product under the trade mark "Preperite" which, although the removal of rust is its primary function, can also be used for the removal of corrosion products from aluminium and aluminium alloys.

Metal-Covered Plywood Units.

A copiously illustrated brochure has recently been issued by Venesta, Ltd., Vintry House, Queen-street-place, London, E.C.4. It gives plans and detailed drawings of w.c. compartments, showers and dressing cubicles for schools, offices, factories and public buildings, using "Plymax" units, the trade name for plywood and other boards covered on one or both sides with metal sheets.

A New Electric Lamp.

Crompton Parkinson, Ltd., Crompton House, Aldwych, W.C.2, announce that a new electric lamp, the Crompton "Whitelight" is now available. It is claimed to give a richer, softer light than the ordinary lamp as the result of the development of a new technique of applying an internal coating of silica to the bulb. At present it is available for a voltage range of 200/260 in 10 volt steps, and costs 2s. plus 7d. purchase tax.

Crompton Parkinson, Ltd., also announce that fluorescent lamps are now available for red, yellow, green or blue lighting. The 5ft., 80-watt. lamps cost 20s., plus purchase tax 5s. 3d.

Savings in Roofing Timber.

"Savings in Timber and Money in Roofing No. 2," is the title of the most recent publication issued by Messrs. Langley London, Ltd. The data contained in this booklet is based upon the revised Ministry of Works Timber Economy Memorandum—Timber No. 2, and additional data furnished by the Department of Scientific and Industrial Research, Forest Products Research Laboratory. In order to stress the substantial savings in timber which the new Ministry of Works recommendations make possible, the firm have prepared for display on their stand at the Manchester Building Exhibition, two quarter-scale models based upon these recommendations as illustrated on pages 10 and 11 of the booklet.

Power Distribution.

The modern approach to industrial power distribution is described in a new publication issued by the General Electric Co., Ltd., Kingsway, W.C.2, entitled "Industrial Metal-Clad Distribution Systems." It points out that development in the use of electrical equipment for industry has greatly increased the importance of planning an adequate power distribution system, and adds that attention must be paid not only to the capacity required at the moment, but also to the ease with which the installation can be extended for serving additional plant.

The General Electric Co., Ltd., has also issued a catalogue giving details and illustrations of their comprehensive range of industrial lighting fittings and accessories suitable for use with Osram general service and high pressure mercury vapour lamps. The range has been developed over a long period and will be found to cover the majority of applications required in industry.

DURESCO certainly

BUT we also make

SILCOLAC
Hard Gloss Paint

SILPACO
Flat Oil Paint

CHARLTON ENAMEL
Hygienic Porcelain Finish

ALKALI RESISTING PRIMER
For exterior application

CALDURO CEILINGWHITE
in paste form

SILKARDO
Washable Distemper

PETRIFYING LIQUID
For thinning and waterproofing

SILKAS VARNISH

CHARLTON WHITE
Flat Undercoating

DURESCO
Texture Paint

DURESCO PRODUCTS

DURESCO PRODUCTS LTD., CHARLTON, LONDON S.E.7. TEL: GREenwich 0035 (four lines)

SAMUEL ELLIOTT & SONS

(ELLIOTTS of READING)

(READING) LTD.

READING

3-compartment Revolving Door, Westminster Branch, National Provincial Bank, 61, Victoria Street, S.W.1

HIGH-CLASS WOODWORK

REVOLVING DOORS

(ELLIOTT'S ANTI-CYCLONE PATENTS)

Including revolving "convertible to swing" type

TABULA SOLID INSULATED FLUSH DOORS

SEMI-FLUSH SOLID FRAMED DOORS

ALSO ALL KINDS OF HARD AND SOFTWOOD JOINERY

Phone: READING 71536-7-8 (LONDON TOLL CALL)

IMPORTANT

additions to Naylor's range of

Naylor's PAINTS & FINISHES

Quality Paints and Finishes

During the 150 years we've been making Naylor's paint we've always insisted that the Paints and Finishes we sold should be of the very finest quality. Only the best ingredients and the highest standard of manufacture have satisfied us. They have satisfied you, too—and that is why we introduce with every confidence the following additions to the range.

SPEEDGLOSS ENAMEL

PASTEL FLAT OIL PAINT

TRANSPARENT PRIMER

OIL BOUND (Washable) DISTEMPER

OAK VARNISH

GOLDSIZE

THE RAWLPLUG PAINT CO., CROMWELL ROAD, LONDON, S.W.7

N61

A New Brick Barrow.

An interesting addition to the range of Wickham plant is a new brick barrow which is designed to pick up and place stacks of 51 bricks. Care has been given to balance and manoeuvrability, and by means of a front castor the barrow may be turned on a single scaffold plank. This castor also assists in negotiating kerbs, hoist platforms, etc., no ramp being necessary. The gripping mechanism is operated by a toggle action which provides a progressively increasing leverage on the sides of the barrow as it comes into contact with, and grips, the stack of bricks.

The method of operating the barrow is to place 51 bricks in a stack, the bottommost layer comprising seven headers on edge, with the frog facing inwards; the remaining 11 layers of four bricks each are stacked alternately headers and stretchers. With the operating handle lifted the barrow is then wheeled close to the stack and supported vertically with the back plate touching the stack of bricks. By depressing the operating handle the barrow's sides will move together securely clamping the bricks and at the same time the claw plate will descend and steady the top of the stack.

ALUMINIUM FOR FLASHINGS AND GUTTERS

A New Development

THE use of super purity aluminium (99.99 per cent. pure) as an alternative to lead, copper and zinc for flashings is announced by the British Aluminium Company, Ltd. The increased costs of these latter materials have encouraged the development of alternative materials not only for flashings but for weatherings and gutter linings as well.

The requirements of an alternative metal for these purposes are exacting in that they must compare favourably with the traditional materials in durability, ductility and price. This new super purity quality of aluminium, the result of extensive research work, achieves all three aims. The durability of aluminium of even commercial purity standard gives rise to no anxiety as the statue Eros in Piccadilly, with 57 years of life, and the roof of part of the New South Wales Government building in Sydney, in good condition after 37 years' life, go to prove. As to price, the new quality of aluminium is well below the price of zinc and copper, and is one-third the price of lead. The problem of ductility has been solved, and the new material should give satisfaction on this score, as it can be worked close to shapes in a way that is probably superior to any metal other than lead.

One looks for drawbacks in what appears at first glance to be a revolutionary advance. The jointing problems are much as those for zinc and copper, and, a welding technique not as yet being available, a lapped joint gives the best results. The metal weathers well and pleasantly, especially in sulphurous atmospheres, while it stands up excellently to acetic acid fumes and sea air. The effect of cement upon the pure metal (as, for instance, when flashings are tucked back into brickwork) are, we gather, negligible. On the other hand, the metal is easily worked, it is cheap and is now available in large quantities, one of the company's Norwegian factories having been allocated to large-scale production of super purity ingot.

Architects and manufacturers may obtain full details and samples from the British Aluminium Company, Ltd., at Salisbury House, London, E.C.2.

THE SCOTTISH BUILDER

NEW BUILDINGS

Edinburgh.—Plans in hand for public school at Old Shoughton, for which the architect is A. G. Forgie (F.), Municipal-chbrs., Parliament-sq., High-st., Edinburgh.

Glasgow.—Plans in hand for additions, etc., by the Scottish Wholesale Co-operative Society, Ltd., to their Scottish bakery at McNeil-st., Rutherglen-rd., the architects being their own staff at 119, Paisley-rd. West, Kinning Park, Glasgow, S.1.

Glasgow.—Plans in hand for alterations and additions at Cadogan-st. for MacKechnie & Co., Ltd., for which the architects are Campbell & A. D. Hislop, United Kingdom Assurance-bldg., St. Vincent-st., Glasgow, W.C.2.

Glasgow.—Plans to be prepared for additions and other works at Elliot-st., Argyle-st., Anderston, for the Clydesdale Cabinet Works, Ltd., for which the architect is James W. Reid, 79, West Regent-st., Glasgow, W.C.2.

Glasgow.—Plans in hand for additions and other works at the "Sunday Post" offices, Port Dundas-rd., Port Dundas, for which the architect is T. L. Gray, 7, Ward-rd., Dundee, Angus.—Plans are in hand for the further development of the housing scheme at Milton, for which the architect is Archibald J. Jury (F.), Corporation Housing Offices, Glasgow Cross, The Trongate, Glasgow.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

APRIL 17.

†***Northampton C.B.**—54 houses in two contracts at King's Heath. Boro' A., Guildhall. Dep. £2. 2s. Tenders by April 25.

APRIL 18.

†***Derby C.B.**—Police houses, etc., Eden-rd., Chaddesden, and Chaddesden Hall estate. Thos. W. East (F.), Boro' A. Dep. £2 2s. each contract. Tenders by May 15.

†***Essex C.C.**—Extension police station. Canvey Island. H. Conolly (F.), County A., Chelmsford.

RENTOKIL TIMBER FLUID

Acknowledged the world over as the safest and most efficient woodworm preventative and curative.

WILL KILL

WOODWORM

Rentokil Timber Fluid is available to Builders in bulk supply. Prices on application. Technical enquiries concerning Woodworm are invited. Write to: RENTOKIL LTD., Dept. B, Technical Advice Bureau, School Lane, Fetcham, Leatherhead, SURREY, or Phone Leatherhead 4021/2.

***STOP* DRY ROT**

Rentokil DRY ROT FLUID is unequalled for use on timber subject to fungal attacks. Send for full particulars and Dry Rot Leaflet TODAY.

†***Isle of Wight C.C.**—Erection of Practical Block as first instalment of Bishop Lovett School, Ryde. Thomas F. Ford (F.), 189, Victoria-st., London, S.W.1. Dep. £3 3s. Tenders by May 2.

APRIL 20.

†***Barking T.C.**—Public convenience, Vicarage Field. Boro' A.

†***Gloucester R.D.C.**—6 houses, Sandhurst. C. D. Carus-Wilson (F.), Hardwicke, Glos. Dep. £3 3s.

†***Gloucester R.D.C.**—12 houses at Brookthorpe. C. D. Carus-Wilson (F.), Hardwicke, Glos. Dep. £3 3s.

†***Hampshire Police Authority.**—Police Superintendent's house at Hollymount, Lyndhurst, and police constable's house at West Wellow. County A., The Castle, Winchester. Dep. £1 1s

†***North-East Metropolitan Regional Hospital Board.**—Conversion of blocks to form nurses' home, Forest Gate Hospital, Forest-la., E.7. Secretary, 11a, Portland-pl., W.1. Dep. £2 2s.

†***Surrey C.C.**—Primary school, Kingston Hill. County A., Kingston. Dep. £2 2s.

APRIL 21.

†***East Sussex C.C.**—Erection of Willingdon County Primary School. County A., County Hall, Lewes. Tenders by May 17.

†***East Sussex C.C.**—Erection of County Primary School, Gibbon-rd., Newhaven. County A., County Hall, Lewes. Tenders by May 17.

†***East Sussex C.C.**—House for caretaker at Haywards Heath County Secondary School. J. Catchpole (A.), County A., County Hall, Lewes.

APRIL 22.

†**Atherton U.D.C.**—Erection of 46 dwellings on Hag Fold site in 3 groups. J. C. Prestwich & Sons, F./A.R.I.B.A., Bradshawgate-chbrs., Leigh. Dep. £2 2s.

APRIL 24.

†***Blackpool C.B.**—15 houses, Mereside estate (Contract No. 12). B.S.

†***Easthourne C.B.**—New school, Milton-rd. B.S., 2/4, Saffrons-rd. Dep. £2 2s.

†***East Sussex C.C.**—Adaptation of Haystoren House, Willingdon, into home for the aged. County A., County Hall, Lewes.

†***East Sussex C.C.**—Adaptation of St. George's, Hurstpierpoint, into home for the aged. County A.

***Edmonton T.C.**—12 flats, Montagu-rd. Architect's Dept., Town Hall. Dep. £2 2s.

†***Hornchurch U.D.C.**—3 blocks of flats at Park-la. and 8 blocks at Brentwood-rd. (6 flats to a block). C., Council Offices.

†***Southampton C.B.**—40 houses and 96 flats, Kingsland housing site. Boro' A. Dep. £2 2s. each. Tenders by May 26.

†***Southampton C.B.**—Two Quanset huts, office blocks, etc., Bevois Town Schools. Boro' A. Dep. £2 2s. Tenders by May 19.

APRIL 25.

†***Plymouth T.C.**—Infants' school, Ernesettle. Louis de Soissons & Partners, 11, The Crescent. Dep. £3 3s.

***Salford T.C.**—Two additional classrooms, Lancaster-rd. school. City E. Dep. £1 1s.

***Salford T.C.**—Two day nurseries, Bradshaw-st. and Hayfield-ter. City E. Dep. £2 2s.

APRIL 26.

†***Wrexham Boro'.**—63 houses, Little Acton. B.E. & S. Dep. £2 2s. Tenders by May 19.

APRIL 27.

***Croydon C.B.**—Classrooms and lavatories, South Norwood junior girls' and infants' school, Crowther-rd., S. Norwood. Chief Education Officer, Katharine-st. Dep. £1.

Newcastle-upon-Tyne C.C. — Erection of houses on Montagu estate as follows: (a) 16 aged people's dwellings on section "B," and (b) 158 houses on section "D." City A., 18, Cloth Market, Newcastle-upon-Tyne, 1.

North Kesteven R.D.C.—Construction and maintenance of 38 houses in various parishes. J. Chadwick, council's surveyor, 31, Clasketgate, Lincoln. Dep. £2 2s.

APRIL 28.

†***Bristol T.C.**—36 flats, Northumberland House estate, Henleage. J. Nelson Meredith, (F.,) City A., Eagle House, Colston-ave. Dep. £2 2s.

APRIL 29.

†***Malden and Coombe T.C.**—Conversion and repair works at "Coombe Ridge House," George-rd., New Malden. T.C., Municipal Offices.

MAY 1.

†***Carshalton U.D.C.**—30 flats, Station-approach. E. & S., Stone-court, The Grove.

***Crewe T.C.**—Six shops with living accommodation at Rolls-av., Totly's Hall estate. L. Reeves, A.M.Inst.C.E., B.E. and architect, Municipal-bldgs. Dep. £2 2s.

***High Wycombe Boro'.**—104 dwellings, on three estates. J. A. Parkinson, B.E. & S. Dep. £2 2s.

***Lincoln T.C.**—Eight shops, five flats and eight maisonettes at Boultham Moor North estate. City A., Stamp End, Lincoln. Dep. £3 3s.

Manchester T.C.—10 shops, 10 maisonettes and 10 garages at Portway, Wythenshawe. City A., Town Hall. Dep. £1 1s.

†***Wandsworth T.C.**—12 maisonettes, Chelsham-rd., Clapham, S.W.4. T.C.

MAY 3.

Guildford R.D.C.—Erection of 32 dwellings at Tillingbourne-rd., Shalford. E. & S., Millmead House, Guildford. Dep. £2 2s.

MAY 5.

Newcastle-upon-Tyne C.C.—Erection of 6 houses in Balliol-gdns., Benton Park-rd. City A., 18, Cloth Market, Newcastle-upon-Tyne.

MAY 8.

***Hoole U.D.C.**—24 houses, Linden Grove estate. R. Boot, architect, 22, Newgate-st., Chester. Dep. £2 2s.

***Norfolk C.C.**—Police houses, Harleston, Happisburgh and West Lynn. C. H. Thurston (L.), County A., 25, Thorpe-rd., Norwich.

***Reading C.B.**—Public service vehicle garage, Basingstoke-rd. B.S. Dep. £2 2s.

***Sale T.C.**—54 houses, Baguley-la. B. Finch, T.C. Dep. £4 4s.

MAY 9.

Truro (Corn.) R.D.C.—Erection of 8 houses at Threemilestone, Kenwyn. J. H. Snellgrove, quantity surveyor, 26, Coinagehall-st., Helston.

MAY 11.

***Chesterfield R.D.C.**—12 houses, Eckington, Birk Hill housing estate. J. B. Wikeley, E. Dep. £2 2s.

MAY 15.

***Brentford and Chiswick T.C.**—24 flats, Edenson-gdns., Chiswick. B.E. & S. Dep. £5 5s.

MAY 18.

†***Portsmouth T.C.**—(a) 14 houses at Paulsgrove (3 sites); (b) 6 houses at Kingsley-rd. City A., 1, Western-parade, Southsea. Dep. £3 3s.

MAY 23.

***Rochdale C.B.**—Grammar School for Boys at Balderstone. B.S. Dep. £2 2s.

NO DATE.

***Lincoln (Lindsey) C.C.**—Infants' school, Priory-la., Scunthorpe. A. Ronald Clark (A.), County A., Lincoln. Dep. £3 3s.

***Ongar R.D.C.**—Six terraced houses at Pancroft estate, Abridge. E. & S., Bowes Field, High-st., Chipping Ongar. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

APRIL 22.

Chislehurst and Sidcup U.D.C.—Painting and redecoration of council houses. E. & S., Mainrd., Sidcup, Kent. Dep. £2 2s.

MAY 1.

***Uxbridge U.D.C.**—Installation of domestic heating systems in 273 houses. H. E. G. Stripp, E. & S., 263, High-st. Dep. £2 2s.

***Uxbridge U.D.C.**—External painting 345 houses. H. E. G. Stripp, E. & S., 263, High-st.

ROADS, SEWERAGE AND WATER WORKS

APRIL 24.

Derbyshire C.C.—Levelling, paving, kerbing, draining and surfacing of Victoria-rd., Beighton. County S., County Offices, St. Mary's Gate, Derby; or Assistant County S., Public Assistance Offices, Newbold-rd., Chesterfield. Dep. £2 2s.

Frinton and Walton U.D.C.—Surface dressing of various roads within the district. H. D. Harrison, A.M.Inst.C.E., E. & S., Council House, Frinton-on-Sea.

Hythe B.C.—Surface dressing of carriageways, promenades and footpaths. K. C. A. Ashby, A.M.Inst.C.E., Boro' S., Municipal Offices, Hythe, Kent.

Morecambe and Heysham B.C.—Advance preparation of roads and sewers, etc., on Blackberry Hall housing site (extension), site No. 10. Boro' S., Town Hall. Dep. £2 2s.

APRIL 27.

Ketton R.D.C.—Construction of pumping station in the parish of Ryhall. Pick, Everard, Keay & Gimson, 6, Millstone-la., Leicester. Dep. £2 2s.

APRIL 29.

Wellington U.D.C.—Contract (a), roadworks, etc.; contract (b), laying of sewers, etc., at Oaken Ground housing site, Rockwell Green, Wellington. E. T. Howard, chartered architect, 67, High-st., Wellington, Somerset.

GENERAL BUILDING WORK

(LONDON)

Bermondsey.—Offices and Showrooms.—Chamberlain & Willows, surveyors, 23, Moorgate, E.C.2, have submitted application for proposed offices and showroom at Nos. 40/46, Weston-st. and 19/20, Melior-st. L.C.C. insist on temporary buildings.

Bermondsey. — Warehouses. — Hay's Wharf, Ltd., propose building new warehouses on land between Hay's-la. and Tower Bridge. L.C.C. has approved.

Dagenham.—Houses.—T.P. consent has been given to Edward Symmons & Partners, surveyors, 36, Berkeley-st., W.1, for 14 houses at Auriel-ave.

Fulham.—War Damage Repairs and Improvements.—L.C.C. propose making war damage repairs and improvements at Beaufort House School at an est. cost of £26,637. Plans by Richard Nickson, M.A., F.R.I.B.A., 34, Welbeck-st., W.1.

Hainault. — Coach Station. — Dix Luxury Coaches, Ltd., propose building a coach station on the industrial estate.

Putney Heath.—Comprehensive Development. —L.C.C. Housing Comm. have approved a layout for Putney Park-la. site, where land has been reserved for sec., prim. and nursery schools, community and health centres, a library, public-houses and shops, etc. The scheme also provides for about 1,200 dwellings.

Shoreditch.—Reinstatement and Improvements. —L.C.C. have approved preliminary plans, prepared by H. S. Goodhart-Rendel & Partners, FF.R.I.B.A., 13, Crawford-st., W.1, for the reinstatement after war damage of parts of the Geffrye Museum, improvements and complete internal and external decoration at an est. cost of £15,939.

Southwark.—War Damage Repairs.—N. F. Cachemaille-Day, F.R.I.B.A., 1, Port Hill, Hertford, is the architect for repairs, including the rebuilding of one wing at the Walworth Secondary School, for the L.C.C. Est. cost is £7,847.

Stoke Newington.—School.—Revised plans, prepared by L.C.C. architects, for the erection of a school in the Orlit type of construction at Abney Park have been approved by L.C.C. The estimated gross cost is £165,925.

Sydenham.—Adaptation.—Plans prepared by Hobday & Maynard, F. & A.R.I.B.A., 3, Beckenham-gr., Shortlands, Bromley, Kent, for the adaptation of the former Government training centre in Worsley Bridge-rd. for use as an annexe to the South-East London Technical College, have been approved by L.C.C. Est. cost is £13,032.

Wandsworth.—War Damage Repairs and Improvements.—L.C.C. have approved plans, prepared by Booth & Ledeboer, F. & A.R.I.B.A., 14, Lincoln's Inn Fields, W.C.2, for war damage repairs and improvements at Woodmansterne-rd. school at a cost of £29,905.

Wandsworth.—School.—L.C.C. have approved preliminary plans for the erection of a school in a standard steel frame construction at Clapham Park. Est. cost is £133,290. Plans by L.C.C. architects.

Wembley.—Flats.—Housing and T.P. Comm. have approved layout submitted by B.E. & S. for erection of 68 flats on two sites to the east and west of Fryent Way at Kingsbury Circus.

"THE BUILDER" PRICES

BRASS TUBES

The Brass and Copper Tube Association announce that in consequence of changes in Ministry of Supply prices for metals announced on April 4, basis prices of tubes have been reduced as follows:—

		Basis Price
Copper tubes ...	reduced by ½d.	= 17½d. per lb.
Brass tubes ...	,, ,, ½d.	= 15½d. ,,
Copper-nickel tubes 70/30	,, ,, ½d.	= 23½d. ,,
Other alloys	Prices on application	

The list prices of condenser ferrules are also reduced as follows:—

Brass and aluminium brass ferrules reduced by ½d. per lb.

Copper nickel ferrules 70/30 reduced by ½d. per lb.

Wembley.—Warehouse and Offices.—E. H. Firmin, A.R.I.B.A., 10, Manchester-sq., W.1, is architect for a warehouse and offices in Ealing-rd.

Wembley.—Office and Alterations.—Raymond Neave, A.R.I.B.A., 2, Lansdowne-walk, Holland Park, W.11, has applied to erect a new office and alterations to factory—Phœnix Telephone Works, Edgware-rd.

(PROVINCIAL)

Aldridge (Staffs).—U.D.C. propose 30 houses. Plans by surveyor, H. S. Onions.

Ashton-under-Lyne.—Montague Burton, Ltd., propose extensions at 143/145, Stamford-st. Architects' Dept., Hudson-rd. Mills, Leeds.—B.C. to invite tenders for further 90 houses at Crowhill estate. Boro' S., T. Kemp.

Barrow-in-Furness.—Electricity Board is to build a power station. Architects, L. J. Couves & Partner, Carliol House, Newcastle.

Bellingham (Northumberland).—Plans are being considered by R.C. authorities for a new church and presbytery.

Belper.—R.D.C. propose 56 houses at Crich and 86 at Kilburn site.

Blackburn.—T.C. to acquire "West Bank," Preston New-rd., for conversion as hostel for aged. W. Pickstone, Boro' E.

Blackpool.—Parochial Church Council of St. Mark's approved erection of Sunday-school and parish hall at £13,000.

Brighouse.—B.C. approved extensions at Brow Mills for F. Peel.—Extensions to works, Bradford-rd., Bailiffe Bridge, for Brighouse Motors, Ltd.—New building to replace existing at Brookfoot-la. for S. Marshall & Sons, Ltd.—B.C. propose 6 shops with 4 flats over at Stoney-la. estate.

Caernarvon.—T.C. propose 150 houses. Plans by surveyor, G. Evans.

Cheshire.—C.C. propose welfare centre at Ellesmere Port and fire station on Holland's site, Macclesfield. Plans by County A., F. M. Parkes.

Chester.—Plans submitted to B.C. for: New building at R.C. Sec. Mod. Sch., Handbridge, for Canon H. Welch, St. Werburghs, Grosvenor Park-rd.—Layout of married quarters, Blacon Camp, for C.R.E. Western Command, Shrewsbury.

Chester.—Church of England Diocesan Education Association (Bishop, Dr. D. H. Crick) propose new prim. sch. at Lache-la. site and a sec. mod. sch. at Malpas.

Chester.—T.C. to negotiate for erection of 100 houses.

Chesterfield.—T.C. received approval for first stage of extensions at Cattle-market.

Coventry.—Ancient Monuments Board propose restoration of Fords Hospital at Grey Friars-la. Architects, W. S. Hattrell & Partners, Queen's-rd., Coventry.

Derbyshire.—E.C. included Hope Valley Sec. Mod. and Grammar Sch. in 1951 programme.

Driffield.—U.D.C. to prepare plans for 40 houses. Surveyor, F. A. Lodge.

Durham.—Licensing Magistrates have confirmed a licence granted to J. W. Deighton, of Crossgate Moor, for a proposed hostel at Crossgate Moor, to be known as the "Red Hills Hotel." The premises will be converted from existing buildings. Architect, S. H. Lawson, Emerson-chbrs., Newcastle-on-Tyne.

Earl Sterndale.—Church Council have received approval for rebuilding church (Vicar, Rev. T. H. Miller).

Flintshire.—C.C. propose kitchen and dining-room at Holywell Grammar School.—Joint school, health, maternity and child welfare clinic at Prestatyn, and a county prim. sch. at Mostyn. County A., W. Griffiths, Mold.

Hebburn-on-Tyne.—It is expected that work will be started about October by Durham County E.C. on the construction of a workshop block as first stage of a plan for a Mid-Tyne Technical College at junction of Mill-la. and Victoria-rd. West. County Architect, G. R. Clayton, Court-la., Durham.

Hinckley.—U.D.C. recommended to approve erection of 108 houses at Sketchley Hall estate, 20 at Red Hall estate, 10 at Mill-la. estate and 6 at Earl Shilton.

Huddersfield.—T.C. approved erection of shops at Bracken Hall and Dalton estates and 13 bungalows for aged at Dalton estate.

Hyde.—P.C. approved plans for:—Extensions, Swan-st., for Swan Welding Co.; extensions to works a Read-st. West for Smith Bros.; additions at Market-st. for Mac Fisheries, Ltd.; police houses at Lilac-ave. for C.C.—To prepare detailed drawings for layout of Cheetham Fold estate.

Jarrow-on-Tyne.—Jarrow and Hebburn Co-op. Society, Ltd., Albert-rd., propose large dairy in Calfclose-la. and Leam-la. area. Society architects, 90, Westmorland-rd., Newcastle-on-Tyne, will submit detailed plans shortly.

Lancs.—E.C. propose adaptation of "Bilsborough Hall," nr. Garstang, as a special school.—Also day nursery at Radcliffe.

Leicestershire.—E.C. propose county sec. mod. sch. at Wigston Magna. Plans by J. E. Blackwell, Grey Friars, Leicester; two-form entry mod. sch. at Barrow-on-Soar; extensions at Shelthorpe Sch., Loughborough; new school at Woodhouse Eaves.

Lichfield.—T.C. recommended to approve alterations at Bore-st., for Jones Garage (Lichfield), Ltd.—Dairy at Birmingham-rd., for Crowsnest Dairies, Ltd.

Little Lever.—U.D.C. seek loan of £40,300 for 24 houses and 8 bungalows.

Liverpool.—T.C. approved layout for 78 houses at Greenhill-rd., Allerton, and 132 houses at Walsingham-rd. (Tenders to be invited shortly.)

Macclesfield.—A. W. Hewetson, Ltd., propose conversion of "Fermain," Oxford-rd., as a day nursery.

Manchester.—University propose extensions at £1,500,000.

Manchester.—T.C. propose county prim. sch. at Button-la., Wythenshawe; 24 houses and 16 cottage flats (scheme 4D) at Woodhouse Park neighbourhood; 10 shops, 16 maisonettes and 10 garages at Cornish-way, Woodhouse Park neighbourhood; branch library at Queen's Park, corner of Rochdale-rd. and Park View.

Middlesbrough.—Kitching & Co., 21, Albert-rd., Middlesbrough, have prepared plans for office alterations in Wilson-st, and Dundas-st. for Darlington Building Society.—Thomas A. Crawford, Borough-rd., Middlesbrough, is architect for alterations to clothing factory, Wilson-st., for Elite House (Middlesbrough), Ltd.—Boro' E. has prepared plans for 12 bungalows at The Greenway and Durnford-rd.—Newcastle-on-Tyne Regional Hospital Board, "Dunira," Osborne-rd., are to establish a pathological laboratory at Middlesbrough General Hospital. Board's architect, P. H. Knighton, A.R.I.B.A.

Middleton.—B.C. approved plans for:—Children's homes at Furness-rd. and Whalley-rd. for Lancs C.C.; preparing quantities for 44 two-bedroomed houses at Hollins estate.

Newcastle-on-Tyne.—Dairy Produce Packers, Ltd., Condercum-rd., are to extend their factory. Architect, J. R. Wallace, Northumberland-sq., North Shields.

Newcastle-on-Tyne.—Extensions are to be made to the showrooms and dental depot of Rosens Dental Depot, Ltd., 4, Great North-rd. Architect, C. Solomon, St. Mary's-pl., Newcastle.

Newcastle-on-Tyne.—Transport Comm. has approved a scheme to build a trolley bus depot in Sandyford-rd. Plans by the City A., G. Kenyon, 18, Cloth-market, Newcastle.

Newcastle-on-Tyne.—Cackett, Burns Dick & McKellar, 21, Ellison-pl., Newcastle-on-Tyne, have prepared plans for additional classrooms at Dame Allan's School. J. T. Bell & Sons, 7, Northumberland-pl., Newcastle, are to build 22 houses in Slingsby-gdns.—Plans have been prepared by J. R. Wallace, 20, Northumberland-sq., North Shields, for extending factory in Condercum-rd. for Dairy Produce Packers, Ltd.—Shell-Mex & B.P., Ltd., Post Office-chbrs., St. Nicholas-st., Newcastle, are to build office and messroom in Shields-rd. and have prepared their own plans.—T. Toward & Co., engineers, etc., Wincomblie-rd., are to extend factory and have prepared their own plans.—M. A. MacKenzie, 1, Eldon-sq., Newcastle, is architect for a proposed church hall at West-rd. for Benwell gr. Methodist Church.—City Council to build 16 old people's houses and 158 other houses on Montagu estate and 6 police houses in Balliol-gdns.

Northants.—E.C. propose commencement of Kettering (Avondale) Prim. Sch., including hall and canteen, in May. County A., A. N. Harris.

Northwich.—U.D.C. approved layout scheme for Leftwich Old Hall site.

Oldham.—E.C. propose junior and infant school at Fitton Hill.—Additional classrooms, etc., at Alexandra Park County School, and at Limeside County School.—Approved plans for: Garage, offices and flat at Manchester-rd., for R. Renton, Ltd.—Extensions to factory at Pioneer-st., for Central Mill Co., Ltd.—Two-storey warehouse at Painter-st., for H. Cheetham & Co., Ltd.

Prees (Salop).—Salopian Engineers, Ltd., propose to carry out extensive improvement schemes to factory.

Pwllheli.—T.C. seek approval to plans for houses at Bron y De.

Quinton.—Trustees of Methodist Church (Chairman, Mr. E. J. Bissell) propose new church at World's End-la. Commencing this summer.

Rednal.—Rubery Parochial Church Council propose new church.

Rochdale.—E.C. approved plans by surveyor for boys' grammar school at Balderstone.—To adapt "Kingsland," Manchester-rd. as home for aged.

St. Helens.—North-West Electricity Board is to build a power station at Bold Colliery. Plans by L. J. Couves & Partners, Carliol House, Newcastle-on-Tyne.

Salop.—C.C. propose county prim. sch. at Madeley. A. G. Chant, County A.

Sheffield.—Regional Hospital Board propose a maternity wing at Rutland Memorial Hospital, Oakham.

Stalybridge.—Plans were submitted to B.C. for: Alterations at "Dog and Pheasant," for Walker & Homfrays, Ltd.—Press-room at Cheetham Mills, for Stalybridge Rubber Co., Ltd.—Reroofing of furnace room and provision of shower baths, for Bridge Colour Co., Ltd.

Tamworth.—B.C. propose further 50 houses. H. F. Bruce Smith, Boro' E.

Upholland.—U.D.C. propose additional 12 houses at Mill-la.

Valley.—R.D.C. to prepare plans and estimates for extensions to council offices.

Wakefield.—T.C. propose further 52 houses at Eastmoor estate extension.—To invite tenders for shops and flats at Flanshaw estate. City A., E. H. Stozicker.

Walker-on-Tyne.—T. Toward & Co., Wincomlee-rd., are to extend their factory. Plans by their own staff.

Warwick.—R.D.C. to invite tenders for 16 houses.

Warwickshire.—E.C. propose conversion of former welfare and sick bay accommodation at Finham Hostel into junior and infants' sch. County A., C. H. Elkins.

West Hartlepool.—T.C. is being recommended to spend £20-25,000 on erection of a restaurant at North Shelter, Seaton Carew.

Worcs.—C.C. to invite tenders shortly for a sec. mod. sch. at Redditch. Architects, Richard Sheppard & Partners, 16, Bedford-pl., London, W.C.1.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Birmingham.—Houses, for T.C. 43 at Sheldon estate: *Goodway (Builders), Ltd., 1204, Stratford-rd., Birmingham, £45,996; 28 at Court Oak-rd.: *Leasowes Building Co., Ltd., Greenhill, Mucklow Hill, Woodgate, £26,366; 4 at Jakeman-rd., Small Heath: *F. Deeley, Ltd., 210, High-st., Harbourne, £4,824.

Birmingham.—Modernising of children's ward and improvements to pathological laboratories at Hallam Hospital, for Regional Hospital Board: *A. F. R. Godfrey & Co., Ltd., Leylands Farm-rd., Penn.

Bootle.—Boys' secondary school, Fernhill-rd., for C.B. W. A. Harrison, M.Eng., M.Inst.C.E., M.I.Mun.E., B.S., Town Hall: *J. B. Johnson & Co., Ltd., 108, Crown-st., Liverpool, 7, £144,964.

Bootle.—Infants' school, St. John's-rd., for C.B. W. A. Harrison, M.Eng., M.Inst.C.E., M.I.Mun.E., B.S., Town Hall. Quantities by Eric Thornely & Partners: *J. B. Johnson & Co., Ltd., 108, Crown-st., Liverpool, 7, £17,406.

Bourne (Lincs).—46 houses at Ancaster-rd., for U.D.C.: *Foster & Sons, Grantham.

Burnley.—Ophthalmic operating theatres at Victoria Hospital, for Manchester Hospital Board: *Clegg Bros. (Burnley), Ltd., Stanley-st., Burnley.

Chipping Warden.—Conversion of R.A.F. Hospital as primary school, for C.C.: *Holland & Marks, Ltd., New-st., Daventry.

"INSULIGHT"
DOUBLE
GLAZING PANELS
Essential where
SOUND & THERMAL
INSULATION
are of primary importance
Consult:—
England's Largest Glazing Contractors
AYGEE LTD.
100, WESTMINSTER BRIDGE ROAD
LONDON + + + S.E.1
'phone: WATerloo 6314 (6 lines)

Croydon.—Extension to sanitary offices, Kingsley School, for B.C.: *Foven Construction Co., Ltd., St. Mary Cray, Kent.

Doncaster.—Erection of 12 bungalows, Intake estate, for C.B. L. J. Tucker, A.R.I.B.A., Estates Surveyor: *Hansons Contractors (Doncaster), Ltd., Albion-chbrs., Station-rd., Doncaster, £11,736 (subject to M.O.H. approval).

Eston.—16 bungalows, for U.D.C. N. C. Harrison, E. & S., Normanby-rd., South Bank. Quantities by Turner & Ing, Darlington: * Isley & Nicholson, 4, Rydal-ave., Billingham, £14,715.

Glasgow.—Erection of Possilpark transport canteen and halls. Quantitity surveyors, W. H. Dunsmore & Sons, F.R.I.C.S., 102, Bath-st. Glasgow, W.C.2: *Hugh Bradley, Gouroch-st. Contracting Works, Glasgow.

Gravesend.—Additional accommodation at St. John's School, Edwin-st., for Kent E.C.: *Foven Construction Co., Ltd., St. Mary Cray, Kent.

Greenock.—New school for the Larkfield area, Inverkip-rd. Plans by the Renfrewshire Master of Works, County-chbrs., Glasgow-rd., Paisley: *Myton, Ltd., Clough-rd., Hull.

Hartlepool.—Erection of club premises in Hart-rd., for the Central United Club. Architect, C. L. Heslop, 7, Upper Church-st., West Hartlepool: *John Proud, Ltd., 196, York-rd., West Hartlepool.

Huddersfield.—Erection of T.V. station at Holme Moss, for B.B.C.: *John Laing & Son, London.

Kirkcaldy.—Extension to municipal buildings, for Corporation. Messrs. Carr & Howard (F.), architects, 110, Old Brompton-rd., London, S.W.7. Messrs. James Gentiles & Son, F.R.I.C.S., quantity surveyors, Central-chbrs., High-st., Kirkcaldy. Excavation, brick and building work, etc., Thaw & Campbell, Ltd., Glasgow, £52,179; steel structural works, etc., Redpath Brown & Co., Ltd., Glasgow and Edinburgh, £2,065; terrazzo, plaster, lathing and allied works, etc., J. R. & A. Adamson, Ltd., Lochgelly, £5,804; plumber and sanitary engineering works, etc., Matthew Hall & Co., Ltd., Glasgow, £3,303; joinery, carpentry and allied works, etc., Bogci & Nicoll, Ltd., Kirkcaldy; painting, decorating and allied works, etc., Neil Nicholson, Kirkcaldy, £2,476; reinforced concrete works, etc., Alexander Fraser, Ltd., Kirkcaldy, £12,730.

Kirkcudbright.—Two-storey office addition at rear of County Offices, for C.C. T. Caldwell, L.R.I.B.A., F.R.I.A.S., County Architect: *Wallace & Co., Kirkcudbright, £30,000.

Leek.—18 houses at Baddeley Green site, for U.D.C.: *H. N. Bourne, Brown Edge, £24,300.

¶London (Admiralty).—Particulars of contracts placed by Civil Engineer-in-Chief's Dept.—Coventry: Admiralty depot, re-roofing boiler shop, Freeman, Morrison, Ltd., 18, Nixon-st., Sandyford-rd., Newcastle-upon-Tyne 2.

¶London (Air Ministry).—Contracts to value of £500 or over for week ended April 1:—Building work: William Sindall, Cambridge: J. F Booth & Son, Banbury, Oxon. Pulling down and rebuilding tower: Wm. Lacey (Hounslow), Ltd., Hounslow. Painting work: Beric, Ltd., Epsom.

¶London (M.O.W.).—Contracts placed by M.O.W. for week ended April 1:—*London*: New Government Offices, Whitehall-pl., erection of the superstructure, Gilbert Ash, Ltd., 2, Stanhope-gate, W.1. *Argyllshire*: Nat. Assistance Board, Queen-st., Dunoon, erection of offices, Cowiesons, Ltd., 3, Charles-st., St. Rollox, Glasgow. *Dorsetshire*: C/E School, Cranebourne, Dorset, erection of H.O.R.S.A. classrooms, B. Hiscock, "Satara," Longham, nr. Wimbourne, Dorset. *Gloucestershire*: Bishops Cleeve Council School, nr. Cheltenham, erection of temporary school buildings, Collins & Godfrey, Ltd., The Cross, Tewkesbury, Gloucs.

Hertfordshire: Garston., building research station, extension and staff canteen, Donald Lockhart, Ltd., 235, High-st., Berkhamsted, Herts. *Lancashire*: Stanley Telephone Exchange, Liverpool, extension, Cartwright Bros. (Little Sutton), Ltd., Wirrall, Cheshire. *Warwick*: Walsgrave-on-Sowe, erection of telephone exchange, J. Daniels, 7, Russell-st., Coventry; Shirley, Birmingham, erection of training school, Geo. Wimpey & Co., Chester-rd., Castle Bromwich, Birmingham.

¶London (War Dept.).—Works contracts placed by War Dept. for week ended April 1:—*Devon*: Painting work, W. T. Pickering & Sons, Ltd., Watford. *Wilts*: Building work, A. J. Dunning & Sons (Weyhill), Ltd., Weyhill. *Surrey*: Building work, Henry T. Hill & Sons, Ltd., Brookwood. *Somerset*: Internal redecoration work, F. Labbett & Sons, Nottingham. *Hants*: Painting and decorating work, T. Metcalfe & Sons, Ltd., Darlington. *Dorset*: Building work (external services), Wm. T. Nicholls, Ltd., Gloucester. *Somerset*: Road work, The Neuchatel Asphalte Co., Ltd., Frome.

Long Eaton.—(a) 34 houses at Wilsthorpe-rd., and (b) 2 houses at Oakleys-rd., for U.D.C. Francis Turner, M.I.Mun.E., A.M.T.P.I., E. & S., Town Hall: *H. Orton & Sons, Ltd., Craig-st., Long Eaton (a) £46,318; (b) £2,935.

Manchester.—Conversion of Warford House and Lodge as residential accommodation: *R. Hough & Sons, Ltd., Wilmslow; erection of

Newall Green Infants' School: *Moston Brick & Building Co., Ltd., Collyhurst, Manchester.

Marshlands (Cambs).—14 houses, for R.D.C. Architect, Council Offices, Alexandra-rd., Wisbech.

Eight at Tilney St. Lawrence:—
M. J. Thompson, Fincham, King's Lynn £11,506
Mr. Durrant, St. German's, King's Lynn 11,031
R. M. Lewis & Son., St. German's, King's Lynn 10,850
J. Taylor, Terrington St. John 10,314
*Warren Bros., Clenchwarton, King's Lynn 10,213

Six at Lady's Drove, Emneth:—
A. C. Medloc, Station-rd., Wisbech ... 8,794
Warren Bros., Clenchwarton, King's Lynn 8,003
H. Tann, 267, Ramnoth-rd., Wisbech ... 7,979
*J. B. Crouch & Co., Wales Bank, Elm, Wisbech 7,830
Wallis & High, Prospect-pl., Wisbech ... 7,806

Merstham (Surrey).—Roads, sewers and other services, and about 1,000 houses, flats and other buildings, for the L.C.C.: *Taylor Woodrow Construction, Ltd., approx. £2,000,000.

Newcastle-upon-Tyne.—Erection of a savings bank at Gosforth, Newcastle-on-Tyne. Architects, Marshall & Tweedy, Grainger House, Newcastle: *Middlemiss Bros., Ltd., Stepney Bank, Newcastle.

Newport (Salop).—36 dwellings at Long Meadow site, for U.D.C.: *William Sharratt, Ltd., 23, Church Lund, Wolverhampton, £42,463.

Oldham.—36 bungalows at Limeside estate, for B.C.: *Greenwoods Buildings Industries, Ltd., Salem Works, Lees-rd., Oldham, £34,275.

Prescot.—6 shops and maisonettes at Bryer estate, for U.D.C.: *D. A. Ablett & Sons (1938), Ltd., Sovereign-rd., Sawmills, Wigan.

Saltburn.—Reconstruction of Saltburn pier, for U.D.C.: *Skinningrove Iron Co., Ltd., Yorkshire.

Sedbergh (Yorks).—Construction of an auction mart, etc.: *P. A. Baines (Northern), Ltd., Culgaith, Cumberland, £10,667.

Shardlow.—34 houses, for R.D.C.: *Pearman & Wade, Ltd., Shardlow.

Southampton.—Junior school at Beech-ave., for C.B. L. Berger, Boro' A., Southampton:—
A. E. Jukes & Son, Ltd., 40,60, King George's-ave., Millbrook, Southampton £119,108
G. E. Prince & Son, Ltd., Chapel-rd., Southampton 115,964
The Unera Construction Co., Ltd., 386, Kensington High-st., London, W.14... 115,746
*The Kent & Sussex Contractors, Ltd., 109, Station-rd., Sidcup, Kent 112,753
(Subsequently reduced by negotiation.)

Stratford-on-Avon.—Additional 6 houses at Tiddington, for T.C.: *Stratford-upon-Avon (Builders), Ltd., £6,575.

Sutton Coldfield.—Houses, for B.C., at Falcon Lodge estate: (18) *W. H. James & Son, Whitehouse Common, Sutton Coldfield, £21,870; (16) *Ashworth & Steward, Ltd., 26, Commercial-st., Birmingham, £19,600; (12) A. E. Jones, 37, Hansonsbridge-rd., Birmingham, £14,800.

Tarvin.—8 bungalows for aged at Old Hall-st., Malpas, for R.D.C.: *John Wright & Sons, Huxley.

Torrington.—Six houses at two sites, for R.D.C. Oliver & Dyer, F./L.R.I.B.A., Queen Anne's-chbrs., Barnstaple. Quantities by A. F. Milward, F.F.A.S. (Eng) (Quant.).

One pair at St. Giles:—
F. Popham, Little Orchard, Torrington... £3,692
A. Darch & Sons, Porch House, Torrington 3,343
*Bushby & Neylon, 45, Torrington-st., Bideford 2,961

Two pairs at Little Torrington:—
A. Darch & Sons, Porch House, Torrington 6,550
*Bushby & Neylon, 45, Torrington-st., Bideford 5,845

Wakefield.—28 houses at Eastmoor estate extension, for T.C.: *West & Sons (Leeds), Ltd., 34, Lincolns-rd., Leeds 9.

Wokingham.—Ten houses and 4 bungalows at School-rd., Arborfield and Newland, for R.D.C. Eric G. V. Hives, L.R.I.B.A., 3, Cork-st., Reading. Quantities by Arthur Boxall & Partners, 7, Queen Anne's-gate, Westminster, S.W.1: *G. & S. Warner, Woodend, New-rd., Ascot, Berks, £18,455.

FEDERATION OF MASTER BUILDERS

UNITE FOR STRENGTH

10,000 BUILDERS

are now members of the

FEDERATION OF MASTER BUILDERS

The Largest Truly Representative Organisation in the Industry

ENROL NOW

SUBSCRIPTION £4.4.0 p.a.
LONDON REGION—37 AREAS
And over 80 PROVINCIAL BRANCHES

'Phone or write:
Secretary:
26, Gt. Ormond St., Holborn, W.C.1
Tel.: CHAncery 7583 (4 lines)
Telegrams: "EFEMBE, Holb, London"

The address of your Branch Secretary will be forwarded.

BROAD-ACHESON
LOADBEARING BLOCKS
for Partition & Cavity Walls
BROAD & CO. LTD. 4 SOUTH WHARF, PADDINGTON, W.2. PADdington 7061

THE ESSEX STEEL SCAFFOLDING CO.
SMART'S LANE, LOUGHTON, ESSEX
TEL.: LOUGHTON 295
SALES HIRE
ERECTION CRADLES

WOOD BLOCK FLOORS
STEVENS & ADAMS LTD.
Victoria Works,
Point Pleasant, Wandsworth, S.W.18

Boyle's Patent "Air Pump" Ventilator
OVER TWO MILLION IN USE
ROBERT BOYLE & SON
VENTILATING ENGINEERS
98, HERRIES STREET, KILBURN LANE, W.10
Tel.: LADbroke 2879

W & M NEGUS LTD
WATerloo 5474
"Three Generations of Building"

GALBRAITH
BROTHERS LIMITED
BUILDERS
CONTRACTORS
& ENGINEERS
of
CAMBERWELL
HEAD OFFICE:
34 & 35, HIGH HOLBORN, LONDON, W.C.1
Tel.: CHAncery 7901-3